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Intrigue of the Past

DISCOVERING ARCHAEOLOGY IN ARIZONA



Project Archaeology

U. S. Department of the Interior
Bureau of Land Management

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U.S. Department of the Interior
Bureau of Land Management
Heritage Education Program





INTRIGUE OF THE PAST: DISCOVERING ARCHAEOLOGY IN ARIZONA

A joint project of the
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CONTENTS

vi List of Figures
vii Forward
ix Preface
xi Introduction to Educators
xii How to Use This Book

DISCOVERING ARCHAEOLOGY IN ARIZONA

1 **The People of Arizona**
Stephanie Whittlesey

2 **Packrats, Mammoths, and Paleo-Indians**
Larry Agenbroad

3 **Why Did Hunter-Gatherers become Farmers?**
Kathleen Henderson

4 **Shopping in Nature's Supermarket**
Joseph A. Ezzo

5 **How Settled was Village Life?**
Lisa Young

6 **Why are there Indian Ruins in Arizona?**
J. Jefferson Reid

7 **When Coronado Hit the Trail**
Jim McDonald

8 **Wagon Wheels and Train Tracks**
Lee Fratt

A Look at Careers: About the Authors
Student Glossary
Index

APPENDICES

1 **Teacher Lesson Plans**
2 **References**
3 **Resources for Teachers**
4 **Evaluation Form**

LIST OF FIGURES

1-3	The Peopling of Arizona Cultural Timeline
1-5	Paleo-Indian and Archaic Peoples
1-9	Village Dwellers
1-15	Cultural Groups of Arizona 1,000 Years Ago
2-3	The Ice Age and the Bering Land Bridge
2-4	A Scene from the Distant Past
3-4	Food Preparation
4-3	Hunting Scene
4-4	Food Guide Pyramid
5-2	Making a Pit House
6-3	How did the Site Form?
7-1	Coronado's Expedition
7-3	Coronado's Route
7-5	Coronado in Arizona
7-7	A True Conquistador: Coronado
8-3	The Trail

FOREWORD

Intrigue of the Past: ***Discovering Archaeology in Arizona*** is part of the Bureau of Land Management's (BLM's) *Project Archaeology* program for teachers. In 1991, BLM embarked on its Heritage Education Program to educate young Americans about their nation's rich cultural heritage and the need to preserve and protect it. *Project Archaeology* is the cornerstone of the Heritage Education Program.

The ultimate goal of *Project Archaeology* is to educate students to take responsible and thoughtful actions toward our archaeological heritage. The fragile record of our past is increasingly threatened. This widespread problem occurs throughout the world affecting cultural sites both on and off public lands. Archaeologists, public land managers and concerned citizens see education as a primary means of reversing this trend.

The need to understand the past, to know about our ancestors or about others who have lived on this land before us is universal. The study of archaeology can lead not only to a greater understanding of the past, but it can help us to understand the present. Archaeological studies give us information about past environments, how humans interacted with those environments, and about environmental change. This invaluable information will help us in planning and managing for future environments.

Studying the past also gives us a sense of place and connectedness in a fast changing world. There is a comfort in looking and connecting with people and places gone by. At risk students often lack this sense of place, especially if their family is very mobile or cut off from their extended family. A study of past peoples and places can help them connect to the idea of a past, even if it is not the specific past of their people.

BLM manages approximately one eighth of the United States or 270 million acres of land, primarily in eleven western states. It is estimated that there are five million cultural sites on those lands. To date, only 9.9 million acres (15,468 square miles) have been surveyed. This is equal to a 5.5-mile swath stretching from Washington, D.C. to San Francisco.

BLM archaeologist John Douglas recently calculated how long it would take to survey all 270 million acres. He says in an unpublished memo, "If 150 BLM archaeologists did nothing else but inventory, including field survey and recordation and records maintenance, each one could average maybe 1000 acres per month, year round. This would total 150,000 acres per month, or 1.8 million acres per year. At that rate, the 270 million acres of BLM lands could be inventoried (first time around) in about 150 years. Of course the work those archaeologists are doing now would not get done, unless BLM hired another 150 archaeologists."

Since the Bureau can't afford to hire 150 archaeologists for 150 years, we must depend on you—the Public—and especially teachers and the future generations they will teach to help us preserve and protect the past. Sites on public lands are being vandalized at an alarming rate. We can't monitor every site 24 hours a day, 365 days a year. However, a committed public can help us control the looting.

Many teachers are interested in using archaeology in their classrooms but need to know more about it. BLM's Project Archaeology program is designed to introduce archaeology into classrooms. Classroom-tested lessons in archaeology are presented in *Intrigue of the Past: A Teacher's Activity Guide for Fourth through Seventh Grades,*. Student materials and state-specific information are contained in *Intrigue of the Past: Discovering Archaeology in Arizona.* The lessons are broad based and interdisciplinary. They may be used singly to enhance and supplement other curricula or they can form a separate curricular unit.

This book is the product of several groups of people and authors. The core of archaeological interpretations were designed by Arizona's Archaeology for the Schools Committee. The Committee also provided the Teacher Resource Directory. We sincerely appreciate all the hours of hard work they put into this publication. We would particularly like to thank Carol Ellick for her work as the committee's liaison to the BLM's Imagination Team. Linda Gregonis explains the design of their chapters in the Preface.

Coronado National Forest provided funds to Archaeology for the Schools Committee for the production of selected graphics. Thanks to Jim McDonald and Patricia Spoerl.

Karen Jackson, Writer Editor of the BLM Imagination Team, edited the book and designed the glossary. Wayne Rice, Visual Information Specialist for the BLM Imagination Team, designed the publication layout and added the graphic art. Roy Paul did the final copy editing. Cindy Ramsay assisted with word lists and many other tasks, large and small. Sheryl Merritt designed the Lesson Plans. Donna Benge added many valuable ideas to the lessons. BLM volunteer Frances Heath spent many hours checking the resource directory.

We also thank Gary Stumpf and Connie Stone, of the Arizona Bureau of Land Management for their assistance with all kinds of arcane questions and needs. The staff at the Anasazi Heritage Center, particulary Victoria Atkins, provided valuable assistance with archaeological questions. Numerous individuals reviewed drafts of the handbook and provided useful suggestions. Finally we are indebted to the teachers who reviewed these lessons for us and who gave us their valuable suggestions for improvement.

Margaret Heath
Chief Heritage Education Project Manager/BLM
September 30, 1994

PREFACE

To develop the following essays for Arizona's *Project Archaeology* student hand book, the Arizona Bureau of Land Management (BLM) contracted with the Archaeology for the Schools Committee of the Arizona Archaeological Council. The educators and archaeologists on the Archaeology for the Schools Committee work to promote the use of archaeology in classrooms. The committee is part of a statewide organization of professional and avocational archaeologists, the Arizona Archaeological Council (AAC).

At the School Committee's 1992 fall meeting, the committee discussed the best way to approach the task of presenting 12,000 years of Arizona archaeology to fourth through seventh grade students. BLM wanted up to eight essays, each presenting a particular topic or idea. Our task was to figure out how to include as much as possible about Arizona's rich archaeological heritage while retaining the individual points of view requested by BLM.

We decided to use time as the main organizer, starting when archaeologists think that people first got to Arizona and ending when Arizona became a state. We took major cultural developments and put them into the time frame. The Paleo-Indian big-game hunters came first, followed by the hunters and gatherers of the Archaic period, and the farmers and village dwellers who are sometime called Formative peoples. That brought us up to the 1500s when Europeans entered the area. We decided to separate the period from the 1500s to statehood into two sections: (1) the time of Spanish and Mexican influence, and (2) the time of American influence.

We worked on the focus of the essays to specify questions about archaeology that would fit into the time and culture categories. We picked topics to fit with each time and culture. We chose the following questions and authors:

- What were the impacts of climate change on the Paleo-Indians? With Larry Agenbroad's paleontological and archaeological background, we thought he would be the ideal person to write about climate change and its impact on the Paleo-Indians. His essay, *Packrats, Mammoths, and Paleo-Indians: Clues to the Ice Ages*, shows how a variety of clues from different scientific fields can be brought together to answer questions about the past.

- How and why did the Archaic people domesticate corn and other crops? Kathy Henderson decided to write about the process of plant domestication. Her essay, *Why Did Hunter-Gatherers Become Farmers?* presents issues that have long intrigued archaeologists working in the southwestern United States and in Mexico.

- Why did Formative period people develop settled village life? Lisa Young has studied whether Anasazi villages were occupied year-round or only at certain

seasons. She discusses several ideas about village settlement in her essay, *How Settled Was Village Life?*

- Why did Formative period people abandon their villages? This essay was to be about the abandonment of villages and other sites. This topic of abandonment is one that nonarchaeologists are very interested in, and one that archaeologists struggle with. Jeff Reid discusses ideas about site abandonment in *Why Are There Indian Ruins in Arizona?*

- Who did the Spanish encounter and how did they interact with people when they came to Arizona? Jim McDonald embraced the idea of writing about the European contact period, so he wrote *When Coronado Hit the Trail: Who Was There and Who Was Visiting*.

- How did new types of transportation change the American frontier? Lee Fratt investigates archaeological sites that date to the historic period. Her essay, *Wagon Wheels and Train Tracks: Historical Archaeology in Arizona*, discusses how we use archaeological information to study things that do not make it into the history books.

- We even got an extra essay because Joe Ezzo heard about the project and volunteered to write an essay on food and nutrition. That essay became *Shopping in Nature's Supermarket: The Diet and Nutrition of Ancient Arizonans*.

- We also decided on an eighth essay that would provide an overview and thread tying all of the essays into a general culture history. Stephanie Whittlesey volunteered to write *The People of Arizona*, the overview essay that tied all of the topics together and became the introductory essay of the series.

The essays were reviewed by Archaeology for the Schools Committee members Barb Gronemann, Donna Benge, Joelle Clark, Jeanne Miller and her school students, Chuck Adams, Teresa Hoffman, and Carol Ellick, BLM archaeologists, and representatives of various Indian tribes throughout the state. The reviewers' comments and criticisms made my task of editing and reworking the essays much easier. The essays were then submitted to the BLM's Imagination Team for final editing, developing the lesson plans, design, and adapting to fifth grade reading levels.

In addition to the essays, the Schools Committee compiled an extensive list of archaeological resources in Arizona that we hope will be useful to teachers and students. The list includes places to visit, federal and state archaeological offices, Indian tribes, archaeological programs, books, videos, and other materials. The Coronado National Forest provided funds for the drawings that accompany the essays. The Archaeology for the Schools Committee and I hope you enjoy the results of our efforts, and we hope that you make *Project Archaeology* part of your regular curriculum.

Linda M. Gregonis
October 19, 1993

INTRODUCTION TO EDUCATORS

Project Archaeology is designed for teaching students about America's rich cultural past and what actions they can take to preserve and protect it. Designed for teachers to reproduce for their own classrooms, the materials can be used to supplement an existing curriculum or as a stand-alone curricular unit.

Archaeology lessons are found in **Intrigue of the Past: A Teacher's Activity Guide for Fourth through Seventh Grades.** This set of twenty-eight lessons is divided into three sections: "Fundamental Concepts," "The Process of Archaeology," and "Issues in Archaeology." The lessons are cross-referenced and keyed into Bloom's Taxonomy.

Intrigue of the Past: Discovering Archaeology in Arizona is the second component of *Project Archaeology*. This volume is designed to provide student materials that are difficult to find in generic textbooks. Like those in the teacher's guide, lessons are cross-referenced and keyed in Bloom's Taxonomy. It is intended to be a companion book to the teacher's guide.

Neither volume includes lessons on mock digs. While these can be valuable learning experiences, teachers are encouraged to use them with extreme care. Mock digs may inadvertently teach that digging is OK anytime, anywhere. However, when used carefully in conjunction with **Intrigue of the Past** lessons, mock digs, laboratory lessons, and reports teach children a great deal about the scientific process in an experiential way.

Remember that conducting a dig at a real site on public lands is illegal unless it is done with a federal or state permit. If you are tempted to begin a dig yourself on private land, we urge you to contact a local archaeologist or archaeological society. Every site contains valuable information that will be lost forever if it is not properly retrieved and reported. Also prehistoric sites are sacred to many Native Americans and care must be taken not to violate sacred places.

You may have received these materials by attending a *Project Archaeology* workshop. If this is not the case, you have only one piece of the complete program. Workshops allow you to experience the activities firsthand, to ask questions and exchange ideas with teachers and archaeologists. Workshops provide current information about archaeology in your area. State, county, and municipal preservation laws and ordinances may affect projects you are planning with your students. Workshops can inform you of this possibility and suggest means to facilitate your project. To find out about workshops in your area, contact the Imagination Team, Bureau of Land Management, Anasazi Heritage Center, P.O. Box 758, Dolores, Colorado 81323, (303) 882-4811.

HOW TO USE THIS BOOK

Please! Reproduce it!

Discovering Archaeology in Arizona is designed to be reproduced for classroom use. We suggest that you reproduce the desired quantities of the chapters and lessons that you wish to use. If you use these materials for some other use, please give us credit. **List our publication, title, and author of the piece you use and give our address.**

Student Glossary: We urge you to reproduce the Student Glossary. New words are defined the first time they are used in the volume. Should you be using a later chapter, the students may need the glossary for definitions.

Grade level: Discovering Archaeology in Arizona is written at a challenging fifth grade reading level. It is appropriate for 4th grades and above.

Boldface words from the text are contained in the word list at the end of each chapter and in the Student Glossary. Words are printed in boldface and defined the first time they are used.

ALL CAPS in the text indicates the word or idea is treated in a side bar on that page.

Lesson Plans: Lesson plans are contained in Appendix 1. Each is organized similarly to the lessons contained in **Intrigue of the Past: a Teacher's Activity Guide for Fourth Through Seventh Grades**. At the end of each lesson plan are suggested links to other chapters in **Discovering Archaeology in Arizona** and to lessons in the Teacher's Guide.

References: Appendix 2 lists the references used in producing **Discovering Archaeology in Arizona.**

Resources for Teachers: Appendix 3 is a compendium of museums, archaeological sites, government agencies, and other resources that teachers may find useful in conducting archaeology lessons.

Evaluation: We are interested in hearing from you. Please complete the evaluation and return it to us. Your opinion counts! We will refer to evaluations when we revise the book.

Intrigue of the Past

DISCOVERING ARCHAEOLOGY IN ARIZONA

1 THE PEOPLE OF ARIZONA

Stephanie Whittlesey

THE FIRST AMERICANS: BIG-GAME HUNTERS

We often hear about the "discovery" of the **New World** by Christopher Columbus in A.D. 1492. But North America was "discovered" thousands of years before Columbus was born, and has been the home for people ever since. We call these first Americans "**Native**" **Americans** or "Indians." In their language, they probably called themselves by words meaning "the people." We'll call them "**native people**." This is their story.

The first discovery of America took place at least 12,000 years ago, when much of the world was covered with ice and snow. Because so much water was locked up as ice in the form of glaciers, the sea level became lower. Lower sea levels created more dry land and connected what is today Alaska with what is today part of Siberia. This land is what we call the Bering Land Bridge. Animals and people could walk over the land from one continent to the other. Over this land bridge came the first of the people to live in North America—the resourceful hunting people that archaeologists call PALEO-INDIANS.

THE PALEO-INDIANS

Who were these Paleo-Indians, the true first Americans? By comparing their teeth and bones with modern and ancient Asian and Native American peoples, and by studying the languages of Native Americans, we learned that the Paleo-Indian people were originally from Siberia. The Paleo-Indian people were related to the Asian peoples who lived in Siberia 12,000 years ago. That is why if you look at the Native Americans who live in Arizona today, you will see they look similar in some ways to Asian people like the Chinese and Japanese.



Clovis Point. The spear points the Clovis people used were very well-made.

Some of The First Americans:

THE PALEO-INDIANS

(PAY-lee-oh IN-dee-uhn)
early people. (paleo=ancient, long ago).

It is hard to say when the first Paleo-Indians arrived in America from Asia. Some may have come as early as 20,000 or even 40,000 years ago. Most moved into North America about 12,000 years ago. The first people to live in America's Southwest came about 11,500 years ago. Their ways of life stayed the same until about 6,000 B.C. *Clovis* people are Paleo-Indian people. Some of the first people in Arizona were the Clovis people who were big game hunters.

Why did men, women, and children cross over the land bridge from one continent to the other? It must have been scary, walking into a strange and unfamiliar land, not knowing what they would encounter. We may never know why the people traveled across the Bering Land Bridge into what is now North America. Did they come because the animals the people hunted for food became scarce? Maybe there were too many people living in one place? Did the weather become so harsh that many animals and plants died? Perhaps the first people in America were simply following the game animals or were searching for special herbs or other plants.

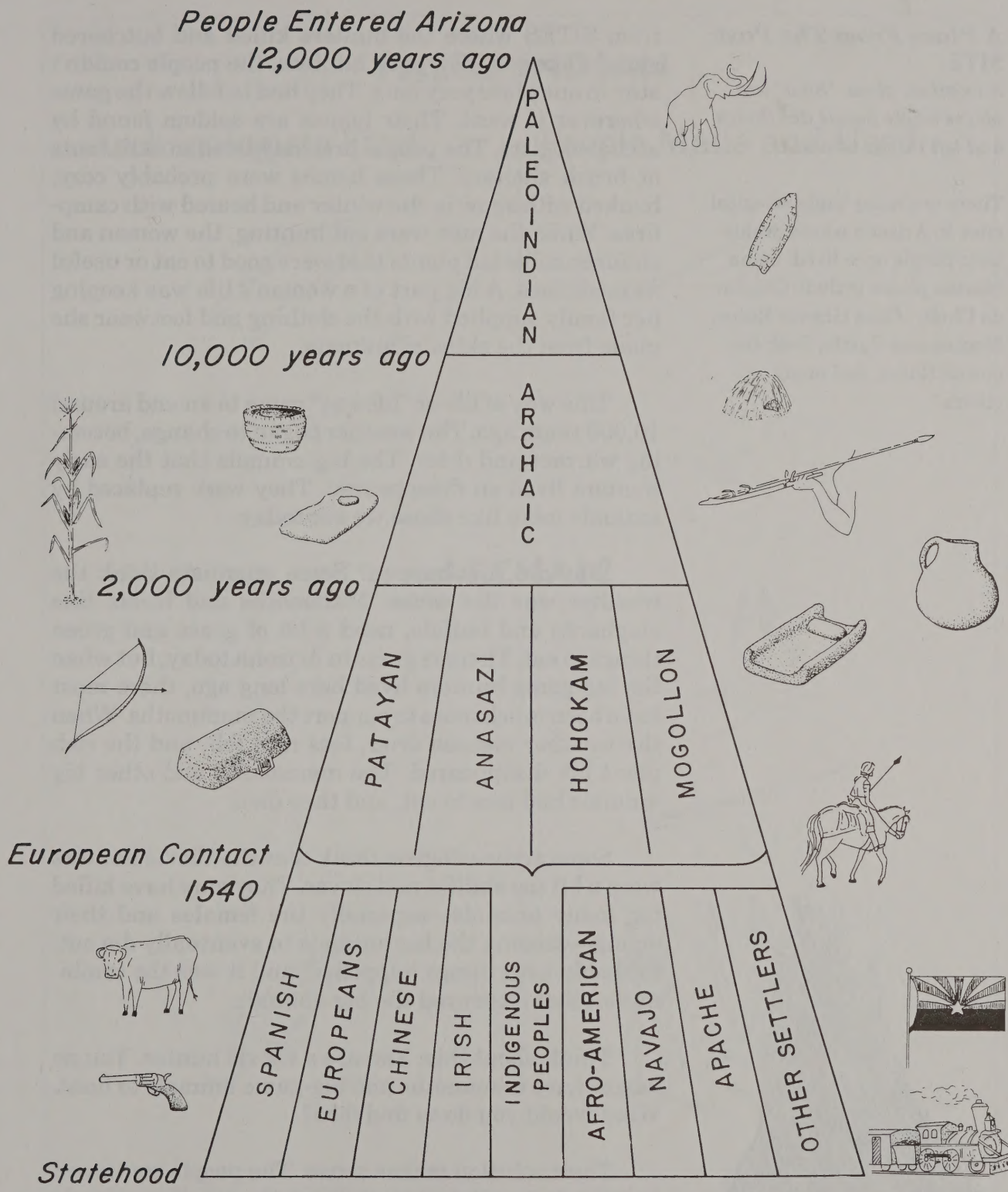
For whatever reason, they came. The people kept moving once they crossed the land bridge, following the game southward—until some of them even reached the tip of South America. Most of the Native Americans who live in North and South America today had ancestors who first crossed the Bering Land Bridge.

THE CLOVIS PEOPLE

Some of the Paleo-Indians lived in what is now the Southwest. They are called "Clovis people." Clovis people lived all over North America. The spear-points they used were very well-made. Archaeologists call those points Clovis points.

The Clovis people probably led a hard life, with many perils. There were enormous beasts—the large mammoths, camels, saber-toothed cats, bison, tapirs and other animals that no longer live in Arizona but did when the last great Ice Age ended. Hunting was very dangerous. Because the Clovis people used only stone-tipped spears, it took many skillful hunters to bring down one animal. We think they stalked female and young mammoths, which were easier to kill than the big bulls. They tricked the beasts by attacking them when they were drinking from a stream and got stuck in the mud. Imagine trying to kill a large elephant with a spear!

We don't know much about the day-to-day life of these people, because most of our information comes



(Susan A. Martin, illus.)

THE PEOPLING OF ARIZONA CULTURAL TIMELINE

A Place From The Past:
SITE
A location, place. "Sites" are places where people did things and left things behind.

There are many archaeological sites in Arizona where prehistoric people once lived. Some famous places include Canyon de Chelly, Casa Grande Ruins, Montezuma Castle, Besh-ba-gowah Ruins, and many others.

from SITES where the hunters killed and butchered game. Because they were hunters, the people couldn't stay in one place very long. They had to follow the game wherever it went. Their homes are seldom found by archaeologists. The people probably lived in skin tents or brush shelters. These homes were probably cozy, banked with snow in the winter and heated with campfires. While the men were out hunting, the women and children collected plants that were good to eat or useful as medicines. A big part of a woman's life was keeping her family supplied with the clothing and footwear she made from the skins of animals.

This way of life or "lifeway" came to an end around 10,000 years ago. The weather began to change, becoming warmer and drier. The big animals that the early hunters lived on disappeared. They were replaced by animals more like those we see today.

Why did this happen? Some scientists think the weather was the cause. Mammoths and bison, like elephants and buffalo, need a lot of grass and green things to eat. There is grass in Arizona today, but when the big-game hunters lived here long ago, there must have been much more to support the mammoths. When the weather became drier, less rain fell, and the rich plant life disappeared. The mammoths and other big animals had less to eat, and they died.

Some archaeologists think that the Clovis hunters were a bit too skillful and clever. They may have killed too many animals—especially the females and their young—causing the big animals to eventually die out. Probably both things happened, and it was the combination that destroyed the big animals.

Think about this: You are a Clovis hunter. You no longer have mammoths and big-game animals to hunt. What would you do to find food?

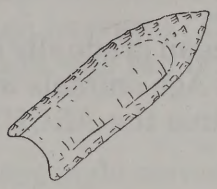
Their solution makes sense. The people continued to hunt, but switched to stalking the smaller animals that were still around like deer and rabbit. Gradually, over time, they made an astonishing change in their lifeway. They began to collect and eat more wild plant foods. Because of the changes in the weather, there

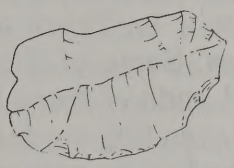


Brush Shelter

PALEO-INDIAN

Archaeologists Find . . .



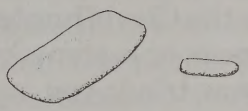


People Made and Used . . .





ARCHAIC

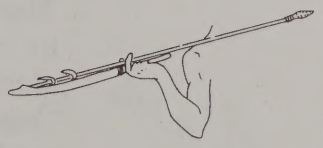












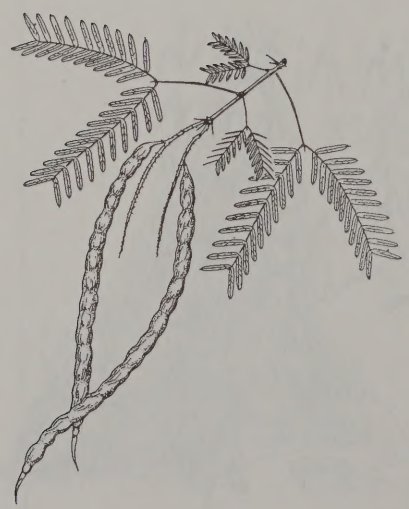




(Susan A. Martin, illus.)

It's Old, It's ...
ARCHAIC!
(ar-KAY-ick)
ancient, old, or surviving from an earlier people. Archaic can also mean relating to an earlier time.

Those who lived in the Southwest after the Paleo-Indians are called the Archaic or Desert Archaic people. They were in the Southwest from about 6,000 B.C. until about 2,000 years ago, after the time of the big game hunters. However, the Archaic people got most of their food from hunting animals and gathering wild plants. The Archaic people learned about corn from people in Mexico.



Mesquite

were probably more plant foods to eat. This change in how people found food was dramatic, and the old way of life for the people was gone forever.

HUNTERS AND GATHERERS

The new way of life began gradually around 10,000 years ago, as the large Ice Age animals were dying out. Archaeologists call this time the ARCHAIC—another word for "old" or "ancient."

We don't usually think of the desert as a place full of good things to eat, but it is. There are plants all around that can be eaten. Some of them are really tasty. Cactus fruits, seed pods of trees like the mesquite and palo verde, and even tiny seeds of grasses are good foods. Away from the lower southern deserts, in the higher and wetter parts of Arizona, people gathered acorns, piñon nuts, walnuts, and berries.

Think about the tools the Clovis hunters used. Can you use a stone-tipped spear or a stone knife to grind up seeds into flour? If you tried, you would quickly learn that such tools won't work very well for grinding. The people began to make tools from coarse rocks such as sandstone to make flour. They used a small hand stone—or ***mano*** (named for the Spanish word for "hand")—on top of a big milling or grinding stone called a ***metate*** (named from the Aztec word *metatl*). Grass seeds and other plant foods were ground into flour and then fried like tortillas or pancakes, or cooked in water like oatmeal. Deeper bottom stones shaped like bowls, which are called mortars, and longer, round top stones called pestles were used to crack nuts and grind up mesquite pods.

THE ARCHAIC PEOPLE

Other things besides tools were different because of this change in lifeways. One very important difference was that women probably contributed a greater share to the daily diet. The Clovis hunters were probably men, and the Archaic men continued to hunt animals. But

women also played important roles as providers of food. Throughout history in most of the world, plant foods have been collected and prepared by women. Archaic women played a vital role in keeping their families fed.

Another result of this change was that the people began to do things that would help the wild plants grow and bring better harvests. This idea of caring for or cultivating plants was the first step toward the practice of farming.



Mano and ***Metate***

The Archaic people moved their homes frequently, just like their ancestors who hunted big game. Because they had to go wherever the wild plant foods were ready to harvest, they couldn't live in one place very long. Cactus fruit in the desert valleys would be ready in the late spring, and in the fall the people might move to the mountain slopes to collect piñon nuts and hunt deer.



Mortar and **Pestle**

The houses of the people at this time were simple homes built of branches and mud. These types of houses could easily be left behind and new ones built in another place. Sometimes rock overhangs and caves were used as shelters. The people probably returned to the same place several times. Perhaps they lived in a particular spot during the summer where water was available and life was pleasant, then moved to another spot in the winter.

Their tools had to be portable, too. Except for the heavy metates (which were probably left behind when the people moved), everything had to be easy to carry and hard to break. Baskets, items made of the stringy fibers of plants such as yucca, and things made of leather and wood were their containers, clothing, shoes, and tools. Babies were carried in cradleboards, with soft material such as bark for diapers.



Yucca

For most tasks, the people used tools made of stone. When someone needed a knife or a saw, it was made by hand from stone in a technique archaeologists call **flint knapping**. To make the tool, a flint knapper had to strike one stone against another, breaking off pieces from one of the stones to create a sharp edge. There were no metal tools such as hammers, because the people had not learned how to mine metal ores and

make tools from it. Even their jewelry was made of stone, bone, or shells from the ocean.

Because the people traveled around so much, they had a wide range of resources to choose from and had friends and family in many places. In that way, people could help each other out by trading goods, by cooperating in the hard work, and by sharing food when times were tough.

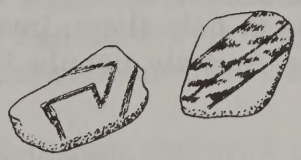
Toward the end of the Archaic period, something happened that changed the lives of the people and their descendants forever. The idea of planting and harvesting crops came to the people, probably from their relatives and friends who lived in the region we now call Mexico. From their neighbors to the south, the Archaic people learned to plant and tend corn, beans, and squash. Their fields were located along rivers where there was water, or at the base of hills where rainwater flowed down after storms. At first, the people probably treated growing crops like just another wild crop. The people continued to move a lot. They only stayed in one place long enough to grow and harvest a crop, then moved on for the rest of the year.

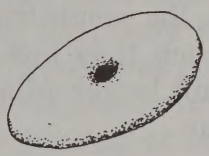
But then they began to adapt their lifeway to growing crops. You need two things to be a good farmer. First, you have to stay at home to keep the crows, mice, squirrels and other birds and animals from eating your crops before you can. Second, you have to have a secure place to store your crops and seeds for the winter. By storing them, the crops will feed you in the winter months and the seeds will be there to plant in the spring.

To solve the first problem of keeping wildlife from eating the crops, the people learned that they had to give up their wandering lifestyle and become stay-at-home farmers. The first corn the people grew was small, with tiny kernels on cobs only a few inches long. Through time the people selected larger seeds to plant, and the corn and its kernels became larger. The people also learned to plant cotton and use its fibers to weave clothing and blankets. They grew a form of half-wild tobacco. They probably smoked the tobacco for special

VILLAGE DWELLERS

Archaeologists Find . . .





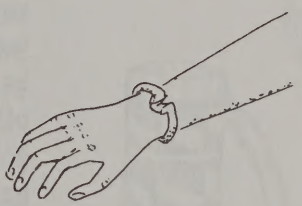


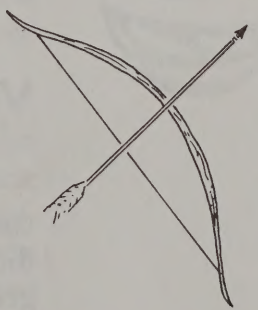


People Made and Used . . .







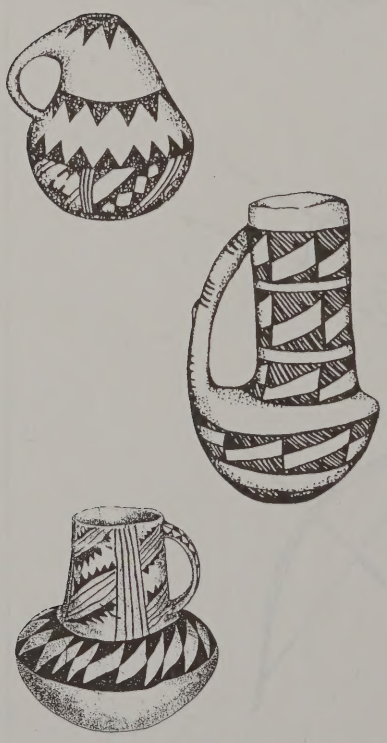


(Susan A. Martin, illus.)

occasions, not just anytime as some people smoke tobacco today.

To make their crops grow more reliably, some of the people who lived near rivers learned to **irrigate** their fields. They built canals to bring water to the fields. **Irrigation** solved the big problem of having to depend on rainfall to water growing crops. You know that today the weather forecasters on television are wrong sometimes—yet they have satellite pictures and other modern inventions to help them. Imagine how difficult it was for the Archaic people to predict when it would rain!

To solve the second problem of storing crops and seeds, they turned to another invention from their neighbors to the south—**pottery**. Instead of baskets to store their seeds, they began to make ceramic pots for storage. There was a catch in this—pots, unlike baskets, are heavy and they break. Once they began to use pottery for their daily tasks, the people traveled around even less than they did when they just had crops to tend to. Gradually, they built larger villages that they lived in for much of the year.



Ancient pottery

As the Archaic period came to an end, the people learned how to make and use pottery. This was an important step for the people, because their lifeways were changed in many ways. The invention of pottery is important to archaeologists also, because they can often identify different groups of the people by the colors, shapes, and designs of the pottery made by each group. By around 2,000 years ago, most of the farming people in what is now Arizona had begun to make pottery.

VILLAGE FARMERS

With the beginning of farming, the people had some control over their food supply. Only in stories and songs did the people remember how their grandparents and great-grandparents moved from place-to-place to live. When more children were born, the population grew.

The Hohokam people

Gradually, larger villages were built and different groups of people began to emerge. The people who lived in the desert parts of Arizona near today's cities of Phoenix and Tucson are called the Hohokam by archaeologists. Hohokam is a Piman term meaning "those who have gone" or "all used up." The Pimas are Native Americans who live in the southern deserts today. We don't know what the Hohokam called themselves, because they had no written language, and their words and tales have not survived through time.

The Hohokam gathered plentiful harvests from their irrigated fields along the rivers. The rivers in the desert had water in them before modern people dammed them up or began pumping groundwater near the rivers to irrigate farmland. They also ate a lot of food gathered from the desert, like mesquite beans and cactus fruit. They built oval structures with side walls of earth where they may have played a sort of ball game. The ball game was probably played for religious reasons instead of just for fun. Perhaps they used these structures for dancing or other community activities. Archaeologists named the structures "ballcourts."

Like many of the people of the prehistoric Southwest, the Hohokam probably did not separate religion from everyday life. A ball game or dance could be sacred and fun at the same time. Later, the people stopped using ballcourts and instead built big, flat-topped mounds of earth, like pyramids with the top cut off. Archaeologists call these "platform mounds." There is no evidence that the Hohokam conducted sacrifices on these mounds, like the Aztecs of Mexico. Archaeologists do think they performed some type of ceremonies on the mounds.

Hohokam pottery was painted with red designs on tan-colored backgrounds. Designs were in geometric patterns or depicted birds, lizards, insects, and sometimes dancing people. When someone died their body was burned and the bones and ashes were buried, often in a pottery jar.

How do I say it? SOME OF THE NATIVE PEOPLE IN ARIZONA

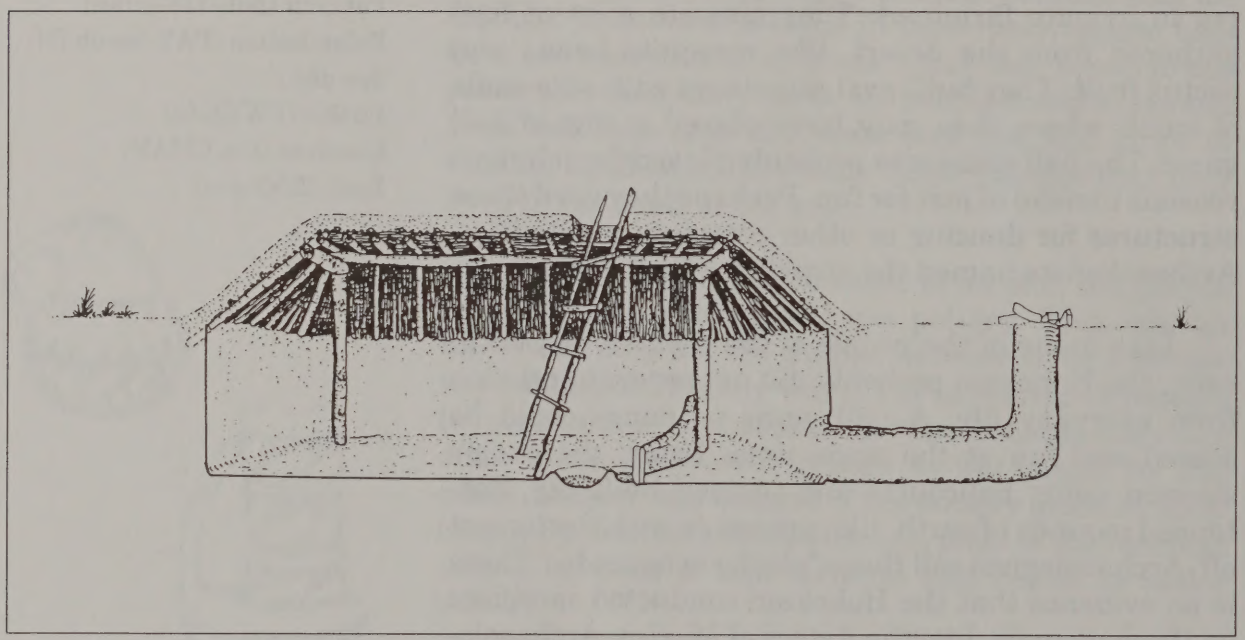
How do you say the names of some of the native peoples that lived in Arizona? Try the following:

Anasazi (an-nah-SAH-zee)
Apache (uh-PATCH-ee)
Archaic (ar-KAY-ick)
Clovis (KLOH-vis)
Hohokam (ho-ho-KAHM)
Hopi (HO-pee)
Mogollon (mug-gee-YOHN)
Navajo (NAV-uh-ho)
Patayan (puh-TIE-yuhn)
Paleo-Indian (PAY-lee-oh IN-dee-uhn)
Pueblo (PWEB-lo)
Quechan (ket-CHAN)
Zuni (ZOO-nee)

Some archaeologists think that the Hohokam migrated into Arizona from the south, from what is today Mexico. We don't know this for sure, but many of their lifeways, their tools, and some of their architecture look much like things used by the people farther south.

The Mogollon people

Farther to the north and east, in the mountains of Arizona and New Mexico, lived a people that archaeologists call the Mogollon. They are named after the Mogollon Mountains of central western New Mexico, where early Mogollon sites have been found. The Mogollon lived first in brush houses, much like those of the Archaic folk except larger and more sturdily-



Pit House. The foundation of a pit house is a pit dug in the ground.

built. Because the foundation of this kind of house is a pit dug in the ground, archaeologists call them **pit houses**. Later, the Mogollon began to build apartment-like houses of stone. Mogollon religious and community buildings are called "kivas." Kiva is a Hopi word for the type of building that the Hopi still use for their ceremonies. The Mogollon built kivas that were rectangular in shape.

The Mogollon were not just farmers. They hunted far and wide and were skilled hunters. They used the bow and arrow, which was invented about 1,500 years ago, to bring down deer, bear, and elk. They grew corn, but they didn't rely on it as much as their Hohokam neighbors did. We know that hunting was very important to the Mogollon because archaeologists find many Mogollon men buried with quivers of arrows and with the tools they used to make arrowheads.

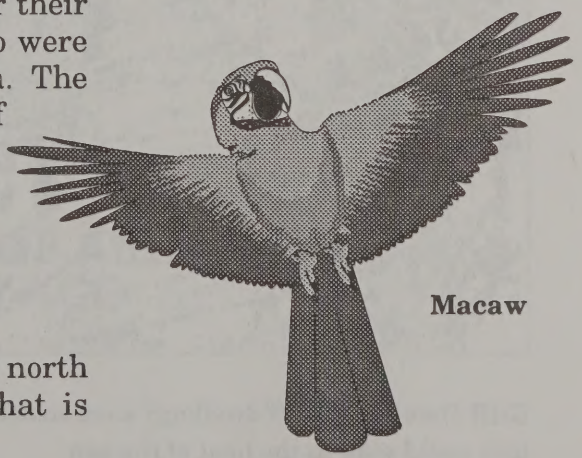
The first pottery they made was plain brown or plain red in color, without painted designs. Later, they made pots with red designs on a brown background. Later, still, they made pots of several colors, such as black, red, and white. The Mogollon seldom painted their pots with designs of living creatures. Instead, the designs were usually complicated ones of lines and geometric shapes.

They buried their dead in graves under the ground, placing food and water in bowls for their loved ones to consume on their journey after death to the other world, or after life, or something such as this. We don't know much about their religious beliefs because there was no written language to help us to understand. All our clues about their lives come from objects they made, called ARTIFACTS, that have survived through time—such as houses, pots, and tools.

Something Made By People:
ARTIFACT
(AR-tih-fakt)
Any object made or used by people or showing human workmanship can be called an artifact. (arte=by skill; factus=to do)

By studying artifacts, we can learn many things about people that lived long ago.

The people in all parts of Arizona remained in close contact with their neighbors in Mexico. They traded with these people for valuable and prized goods, such as shell from the Gulf of California, copper bells, and parrots called Macaws, which were kept for their bright and colorful feathers. Goods from Mexico were traded widely with all the people in Arizona. The Mogollon were especially fond of jewelry made of turquoise. They could mine turquoise with simple tools and turn the gem into earbobs, beads, and such things.



Macaw

The Anasazi people

Another group of people, the Anasazi, lived north of the Arizona mountains, around the area that is

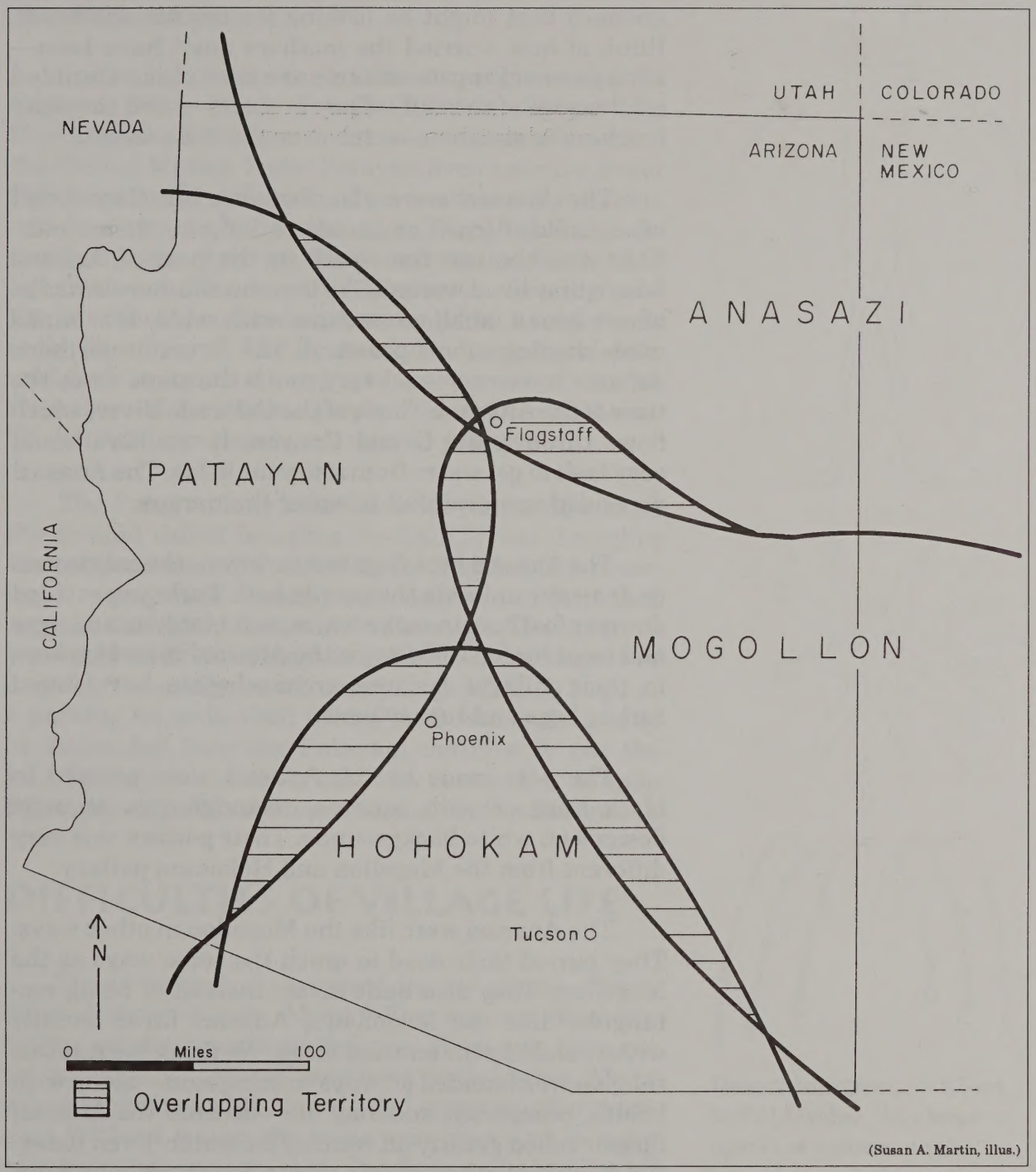
today near the towns of Winslow and Holbrook. They also lived north of the Grand Canyon past the Utah border, in northern New Mexico, and in southwestern Colorado. Anasazi is a Navajo word meaning "enemy ancestors." The Hopi, who may be descendants of some of the Anasazi, call these people "Hisatsinom."

The Anasazi seem to have lived in ways that are more similar to the Mogollon than to the Hohokam. This is one reason that archaeologists think that the Hohokam came into Arizona from Mexico. Archaeologists call both the Anasazi and Mogollon "Pueblo people" because they built **pueblos**. Spanish explorers called them Pueblos after the Spanish word that means "village" or "town" because they lived in villages.

Like the Mogollon, the Anasazi lived first in pit houses and later in stone apartment-like houses. Some of the apartment houses were built in caves or south-facing rock shelters where the buildings could soak in the heat from the sun. These are called **cliff dwellings**. The cliff dwellings were warm in winter and sheltered from the rain. They were very safe places to live in because they could be defended easily from



Cliff Dwelling. Cliff dwellings were sometimes built in caves or south-facing rock shelters where they could soak in the heat of the sun.



CULTURAL GROUPS OF ARIZONA 1,000 YEARS AGO

enemies that might be looking for trouble. However, think of how worried the mothers must have been—always checking to make sure no babies tumbled off the edge of the cliff! They probably asked the older brothers or sisters to watch over the little ones.

The Anasazi were also farmers, but they didn't often build ditches or canals to irrigate their fields. This was because the rivers in the part of Arizona where they lived weren't like those in southern Arizona where broad, shallow streams with wide, low banks made digging canals practical. The rivers in northern Arizona have remained very much the same since the time of the Anasazi. Think of the Colorado River, which flows through the Grand Canyon. It wouldn't be an easy task to get water from it to your fields. The Anasazi depended upon rainfall to water their crops.

The Anasazi kept dogs and turkeys—the only tamed or domestic animals the people had. Turkeys provided down or feathers to make warm, soft blankets and eggs and meat for food. We know the Anasazi raised turkeys in their villages because archaeologists have found turkey eggs and turkey pens.

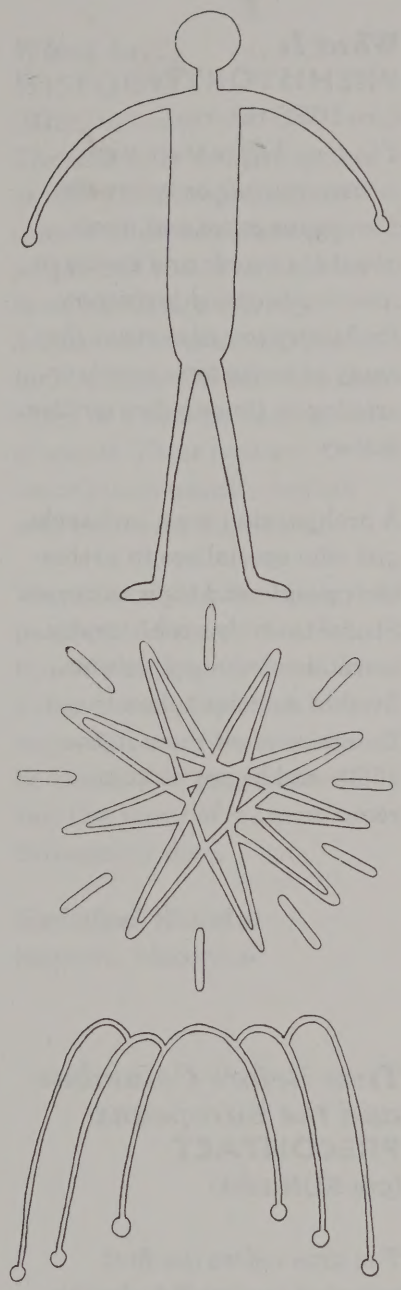
The pots made by the Anasazi were painted in black lines or with squares, rectangles, or triangle designs on white backgrounds. Their pottery was very different from the Mogollon and Hohokam pottery.

The Anasazi were like the Mogollon in other ways. They buried their dead in much the same ways as the Mogollon. They also built kivas. Instead of being rectangular like the Mogollon's, Anasazi kivas usually were round like the sun and moon. We think the Anasazi religion was founded on ways to bring rain—along with health, prosperity, and long life—because the Anasazi farmer relied greatly on rainfall for water. Even today, the Hopi and other people whose ancestors may have been the Anasazi, hold ceremonial dances to bring rain and good health.

The Patayan people

In the far western deserts lived a people we call the Patayan. Many of the Patayan lived in villages near the Colorado River from the western Grand Canyon to the Gulf of Mexico. Some Patayan lived near the lower Gila River west of Phoenix. They made mostly undecorated pottery of a buff or tan color. They planted crops on the floodplains of rivers after the rivers had flooded and left fresh soil. This is called "floodwater farming" and the land that is covered with water when a river floods is the "floodplain." The Patayan also hunted and gathered foods in the desert and upland areas away from the river. Some of the Patayan people lived in the mountains. They made brown and gray colored pottery.

The Patayan may have made very large figures on the ground called Intaglios (in-TALL-yohs). Intaglios are patterns made by removing the dark surface covering of rocks (called **desert pavement**) in a pattern that exposes the lighter rock and dirt beneath. The patterns were made in different large shapes like a human figure or a spiral. These shapes were very large, often as large as a parking lot or football field. The Quechan, who may be descended from the Patayan, continue to use the intaglios as part of their religious ceremonies to help them remember their sacred stories and traditions.



Desert Intaglios. (DEZ-ert in-TALL-yohs) Very large figures or patterns on the ground are called *intaglios*. They are made by removing the desert pavement in a pattern that exposes the lighter rock and dirt beneath. Some intaglios were as large as parking lots or football fields.

DIFFICULTIES OF VILLAGE LIFE

Times weren't always good for the people. Sometimes disaster struck. About 700 years ago, disasters hit the people in northern Arizona. They may have cut too many trees. The soil may have eroded away. There was a long **drought**. No rain fell summer after summer. Without water, the crops were poor and in some summers there was no corn. The Anasazi had to live on wild plant foods and animals. The Anasazi may have had no choice—they probably had to either move or die. Many people were forced to leave their homes and move to the south, hoping to find a greener, wetter land.

The drought affected everyone, not only the Anasazi. This was an unsettled time of much movement

What Is ...
PREHISTORY?
(pre-HISS-tuh-ree)
The time before there were written records or before the Europeans came and wrote about the people and events in America is called prehistory. Prehistory can also mean the study of prehistoric people or existing in times before written history.

A prehistorian is an archaeologist who specializes in prehistoric people and their cultures. Students study prehistory to learn about the people who lived in Arizona before the Europeans met them in the 1500s and began written records.

and hopelessness among the people. It was a time of conflict, too, because hungry people will do anything to fill their hurting bellies—even if it means stealing someone else's stored food.

In other parts of Arizona, a little later in time, there was another type of disaster. A great flood swept away the houses, canals, and fields of the Hohokam living along the desert rivers. The Hohokam abandoned their villages. We don't know if they moved away permanently or not. It is possible the Hohokam changed their lifeway and archaeologists could no longer recognize them as Hohokam.

The drought, floods, and other problems around 600 or 700 years ago caused many of the people in Arizona to move or to change their lifeways. Some of the people remained at the Hopi villages and desert areas of Arizona. Others stayed at Zuni Pueblo in Western New Mexico and at several villages along the Rio Grande. Still others lived in the Sonora desert in Mexico. Yet many parts of Arizona, especially the mountains, were now completely deserted.

This was a troubled time, and we don't know exactly what happened. Two hundred years later, the people of the Southwest experienced another enormous change. Sometime in the late spring of A.D. 1540, the people living at Zuni in Northwestern New Mexico saw a remarkable sight: men arrived dressed in shiny clothes of an unknown material and riding great beasts with four legs. They were armed with deadly weapons that made much noise and smoke.

Time Before Columbus and the Europeans:
PRECONTACT
(pre-KON-takt)

The time before the first recorded contact, or meeting in America of the Europeans and First Americans. Many native people have oral histories about their lives before the Europeans came to America. Some scientists and historians are using the term "precontact" for "prehistory" and "postcontact" for "history."

These were men of the army of Francisco Vasquez de Coronado the *conquistador* (meaning "conqueror" in Spanish). Coronado's men were riding animals the people of Arizona had never seen before—horses.

Coronado and his army had toiled their way northward from Mexico, losing men and horses on their way through the mountains. They brought many things with them—horses, sheep, cattle, metal, new crops such as wheat, a new and different religion, written language, and diseases that killed many of the native people.

Many of the native people resisted the Spanish coming into their land. In A.D. 1680 the Pueblo people, including the Hopi and Zuni, drove Spanish settlers out of northern Arizona and New Mexico. Then in A.D. 1751, the Piman people in southern Arizona revolted, burning Spanish ranches and churches. Although many native people and Spaniards lost their lives in the attempts to resist Spanish colonization, the attempts were useless. The New World was "discovered" again, and the people would never be the same.

HISTORY: THE MOST RECENT PAST

When Coronado and other Spaniards arrived in Arizona, this was the end of PREHISTORY or the PRECONTACT period. HISTORY or the POST-CONTACT period begins in Arizona with the arrival of the Spanish and other Europeans from the **Old World** of Europe with their written records. The Spanish began writing about the people who were already here. The presence of written records is the way we define history.

What Is ...
HISTORY?
(HISS-tuh-ree)
The time after written records or after the Europeans first came and wrote about the people and events in America is called history. History follows the time we call prehistory. History can also be a tale, story, or a written description of events. These written descriptions usually explain why the events happened.

We are studying the history of people in Arizona, from the time of the Spaniards until today. Some people say history—"his story"— should also be herstory—"her story"—to tell the story of women throughout time.

Related Words:
historic, historical

About the time the Spanish arrived, another new people came into Arizona. These were native people who spoke a language related to some Canadian native languages. Their language and lives were much different from the other native people in Arizona. They became known to us as the Apache and Navajo. The Apache and Navajo quickly adapted to their life in Arizona.

After arriving in Arizona, both the Apache and Navajo began hunting and trading meat to the Pueblos for corn. They also learned how to weave blankets from the Pueblos. Later, after the Spanish brought sheep and goats to the area, the Navajo based much of their life on herding these animals. They learned to weave beautiful and useful blankets from the wool.

... And After...
POSTCONTACT
(post-KON-takt)

The time after the first recorded contact or meeting in America of Europeans with the native people. Many scientists and historians call this period of time "post-contact" instead of using the term "history."

The Apaches soon learned how useful the horse could be for food and transport. In addition to hunting and farming, they raided and made war on other native people and on the non-native people. The Apache

considered this a legitimate and valid lifeway, although it made life difficult for the other groups. Much time was spent trying to force the Apache to yield to authority of the non-native people. Many people died in the conflicts.

Many non-native peoples had a part in building the Arizona we live in today. The Spanish were the first Europeans to arrive. Their settling of new lands was combined with bringing the Catholic faith to the native peoples. After the Spanish, the Mexicans controlled Arizona until the United States gained control of northern Arizona in A.D. 1848 at the end of the Mexican War. Later, the United States purchased southern Arizona from the Mexicans in A.D. 1854. This sale was known as the "Gadsden Purchase." The Spanish and Mexicans mined for silver in Arizona. They also established great ranches (*ranchos* in the Spanish language).

Beginning in the 1840s, other non-native groups began to enter Arizona. Anglo-Americans of European descent trapped beaver, prospected for gold and silver, and later began to raise enormous herds of cattle. Anglo-Americans took over many of the large tracts of land originally granted to the Spanish and the Mexicans. Mormon farmers and ranchers moved south from Utah, building many new communities.

This was a time of continued wars with the Apache; of gold, silver, and copper mines; and the establishment of the Arizona Territory. African-Americans came into the Arizona Territory as soldiers, prospectors, and settlers. Asians, especially the Chinese, were brought into the Territory to work in mines and later to provide labor for building the railroads. By the 1880s, Arizona Territory was linked to the rest of the United States by the railroad. On Valentine's Day in A.D. 1912, Arizona became a state.

The rest, as they say, is history—but the people remain. The lifeways of the people of Arizona have been changed by the events of history, but we can still see the threads that tie us to our past. The Hopi still dance for rain and pray in kivas that closely resemble those that were built some 700 years ago. The Navajo make beautiful silver and turquoise jewelry, and many

still herd sheep. The O'Odham still collect cactus fruit before the summer rains begin. Hispanic and Anglo people still raise cattle and mine for copper. Their story will continue as long as the people remain.



WORD LIST

☐ **cliff dwelling** (KLIF dwell-ing) Houses built into stone cliffs or in wide caves in the cliffs. This made them easy to defend against invaders because people could only reach them by ladders or climbing up the cliffs from below. *There are Anasazi **cliff dwellings** at Canyon de Chelly in Arizona.*

☐ **desert pavement** (DEZ-ert PAVE-ment) A black surface covering made of tightly packed pebbles and other rock fragments. The wind has removed all smaller particles. The strong winds in the desert carry dust and sand that sometimes polish the surface of desert pavement, making it shiny and smooth. *Intaglios are made by removing the **desert pavement** to reach the lighter sand underneath.*

☐ **drought** (drowt) A long, dry period of time when it doesn't rain. When the land needs rain and doesn't get it, all living things are affected. Many plants die or do not grow. There is little water. Animals die because there is no food. *Some of the early people of Arizona may have abandoned their cliff dwellings when they suffered a **drought.***

☐ **flint knapping** (FLINT nap-ping) A method used to make spearpoints, arrowheads, and knives from stone. A stone or antler is struck against another stone, making smaller pieces of stone break off from it. *The **flint knapper** continues to take off chips or flakes of stone until the object is complete.*

☐ **irrigate** (EAR-rih-gate) To supply water for the land through streams, channels, pipes, ditches or by sprinkling. *The farmer **irrigated** the dry land so that crops could be grown.*

☐ **irrigation** (ear-rih-GAY-shun) The act of supplying land with water. ***Irrigation** made it possible for crops to grow in the desert.*

☐ **mano/metate** (mah-no, meh-TAH-tay) In the Southwest, *mano* comes from the Spanish word for "hand" and is a small grinding stone held in the hand. The mano is used to grind corn and grain on a larger stone, the *metate*, to make flour. The *metate* is used to hold the grain. *The **mano**, a rounded or flat stone, is pushed against the metate surface to break the grains down against the stone **metate**.*

☐ **Native People or Native American** (NAY-tiv PEE-pull) or (NAY-tiv uh-MEHR-ih-kuhn) The people living in North and South America before Columbus came. Today's Native Americans have ancestors who lived in this country for thousands of years before Columbus came. Also called American Indian and First Americans. *We are learning about the prehistoric and **native peoples** in Arizona.*

☐ **New World** (new world) The continents of North America and South America and the western hemisphere. A term first used by Europeans. *Columbus was one of the first Europeans to find the **New World**.*

☐ **Old World** (old world) The continents of Europe, Asia, and Africa and the eastern hemisphere. *Many Native Americans in Arizona suffered during the years after they met people from the **Old World**.*

☐ **pit house** (pit hows) A home built partly underground by ancient peoples. The pit house often had a main living area and sometimes had a smaller area. *Several groups of people built **pit houses** in their villages to use the ground as walls and insulation for their homes and supplies.*

☐ **pottery** (POT-uh-ree) Earthenware or clayware pots, dishes, or vases. These cups, bowls, and other dishes or objects were made from clay and hardened by heat. *Among the ancient peoples of Arizona, many different types and designs of **pottery** were developed.*

☐ **pueblo** (PWEB-low) A Spanish word meaning "town," "city," or "village." A village of apartment-type buildings of two or more stories. ***Pueblos** are built of adobe and stone and usually have flat roofs.*

2 PACKRATS, MAMMOTHS, AND PALEO-INDIANS:

CLUES TO THE ICE AGES

Larry D. Agenbroad

We live in the Quaternary, a period of geologic time known as the fourth period in the history of Earth. The Quaternary consists of two smaller blocks of time scientists call epochs. The **epoch** we live in now is the **Holocene** or recent epoch. The Holocene epoch has lasted for the past 10,000 years.



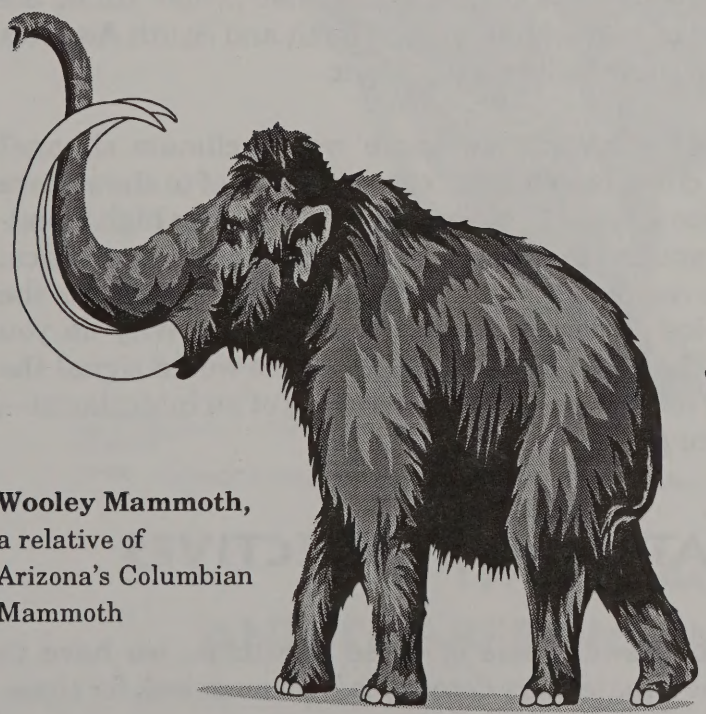
Ground Sloth

Geologists call the earlier epoch in the Quaternary—the Ice Ages or **Pleistocene**. At four different times during the Pleistocene, thick ice sheets covered the northern part of North America. One ice sheet reached as far south as today's Kansas City, Missouri.



Camel

Between the times when ice advanced (**glacials**), there were warm periods geologists call interglacials.



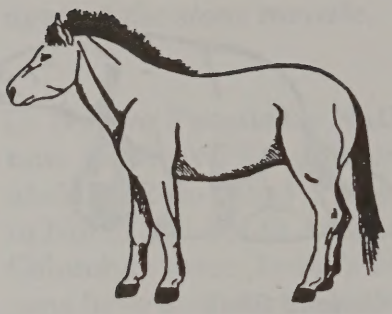
Wooley Mammoth, a relative of Arizona's Columbian Mammoth



Saber-tooth Cat

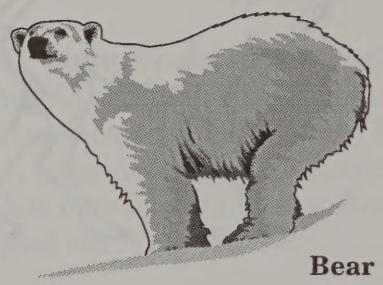
These interglacials caused the ice sheets to melt and become smaller or disappear. Some scientists think today's Holocene is nothing but a warm period between the ice sheets. They think that we will have another ice age a few thousand years from now.

During the Pleistocene, there were many large animals. Scientists call these animals as a group, **megafauna**. Megafauna were animals that weighed more than 100 pounds. Included were ice age elephants—mammoths—much larger than today's elephants. A mammoth stood as high as 14 feet at the shoulder and may have weighed as much as eight tons or 16,000 pounds!



Horse

Large Pleistocene animals that lived in Arizona included Columbian Mammoths, three kinds of ground sloths, horses, camels, bison, shrub oxen, a form of mountain goat, saber-toothed cats, short-faced bears, and very large dire wolves. Today, most of these types of animals are **extinct** or are much different. What do you think could have caused them to die out?



Bear

Some people think that when the Pleistocene ended, around 10,000 years ago, a major climate change happened. This change in climate may have caused the **extinction** of large animals. Other people think the arrival of human hunters in North and South America caused these animals to die out.

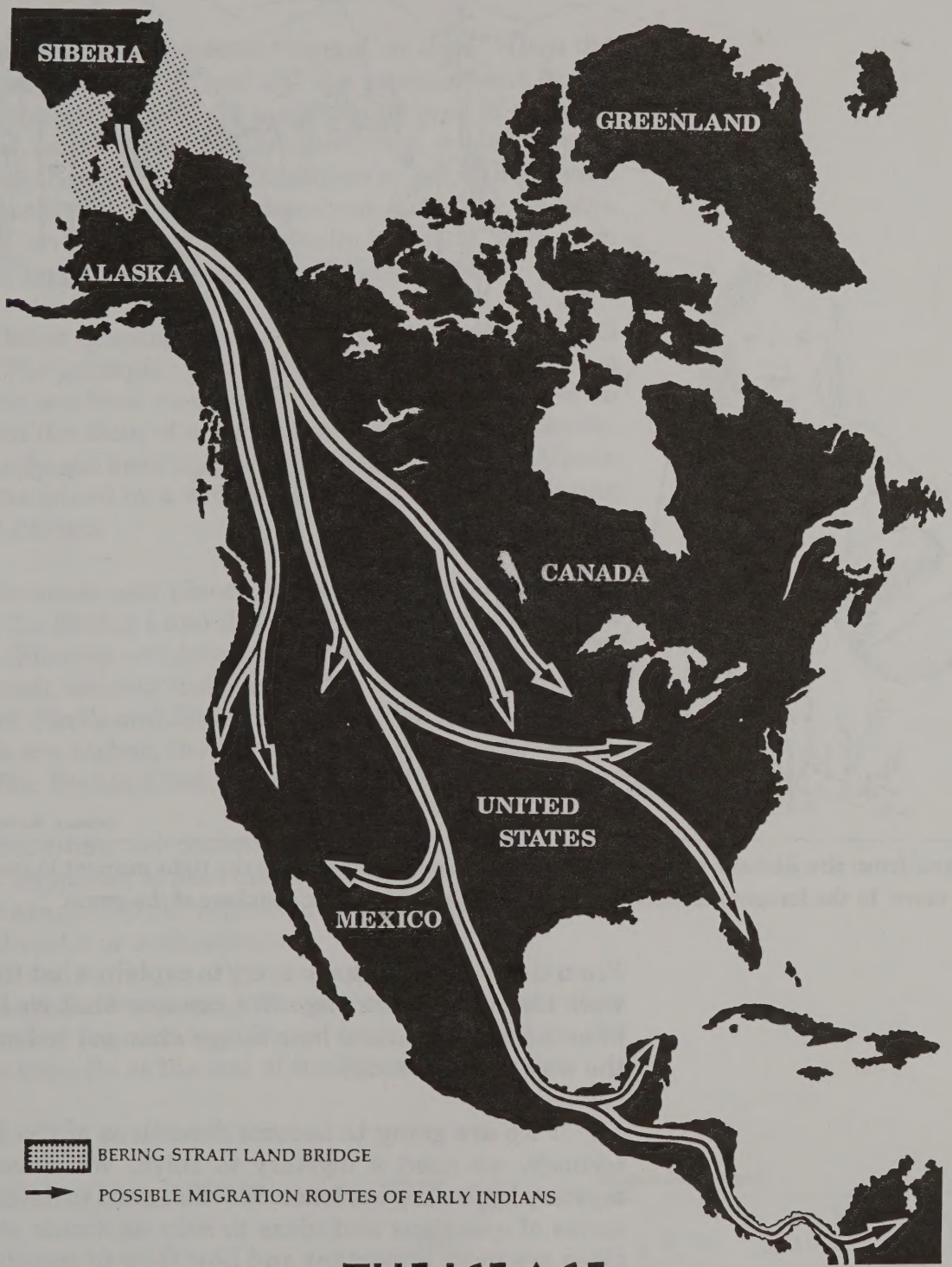
How do we know there was a climate change? What clues, or evidence, can you think of to show there were ice sheets? **Glaciers** do exist today in high mountains and in places such as Greenland and Antarctica. These rivers of ice are not in the same locations as the huge ice sheets during the Pleistocene. Why do you think that happened? What evidence would signal the end of an ice age and the beginning of an interglacial—a warm period?



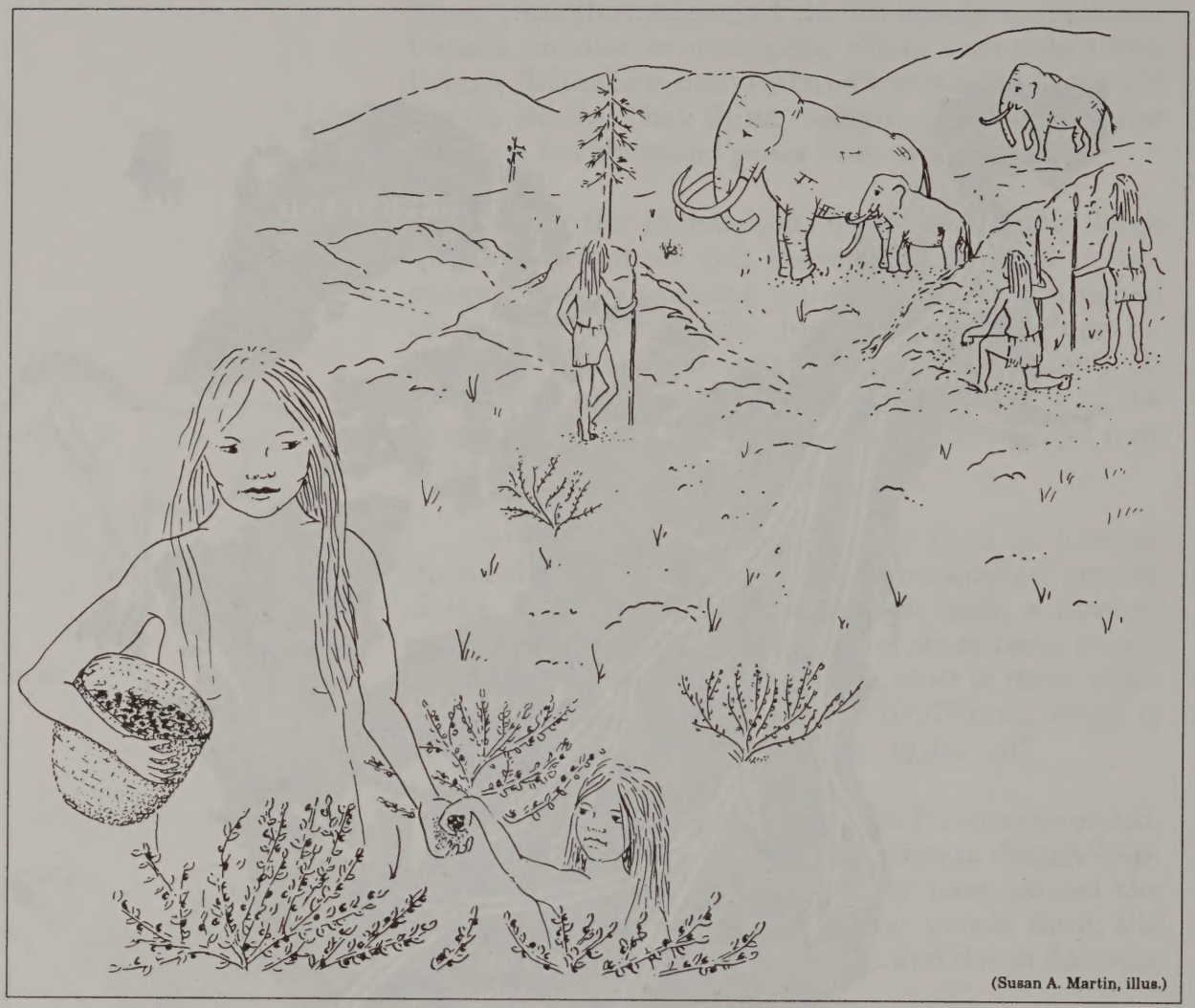
Bison

QUATERNARY DETECTIVES

To answer some of these questions, we have to become "Quaternary detectives." We must look for clues.



THE ICE AGE AND THE BERING LAND BRIDGE



A scene from the distant past. Paleo-Indian hunters anticipate just the right moment to make their move. In the foreground, berries are being gathered by other members of the group.

From these clues, we have to try to explain what things were like 10,000 years ago. We can use what we learn in order to understand how things changed to become the way they are today.

If we are going to become detectives of the Quaternary, we need a mystery to solve. We solve the mystery by finding evidence. We then need to develop a series of questions and ideas to help us decide which clues are most important and how they fit together.

Our mystery is this: Why did many of the large animals—the megafauna—become extinct at the end of the Pleistocene? Was nature or hunting by humans

to blame for the changes that happened 10,000 years ago?

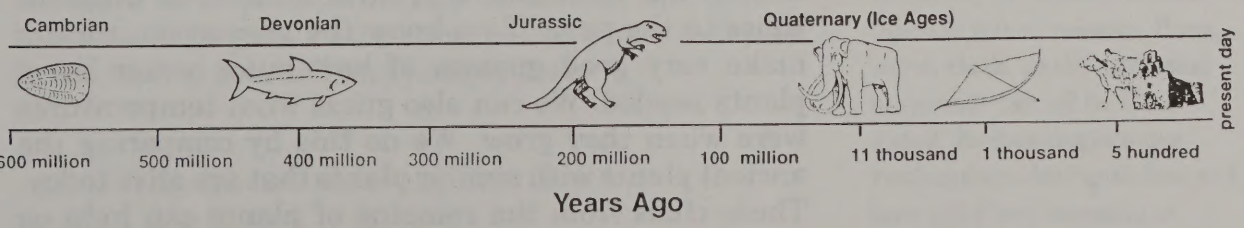
Some of the questions depend on time. When did an event happen? When did the environment or climate change? When did a particular type of plant or animal exist? If we can date an event, a plant, or an animal, then the dates will help us to see if there were changes through time. If there was a change, we have to try to figure out how plants, animals, and even people adapted or adjusted to those changes.

Other questions are about what happened and how. For example, scientists know that during an ice age the sea level was lower. Water became trapped on land in the form of snow, ice, glaciers, and ice sheets. When the sea level dropped 300 feet, Siberia and Alaska became joined by a wide strip of land called the Bering Land Bridge.

Animals and plants, such as horses and camels, used the Bering Land Bridge to travel into Siberia and Asia. Siberian and Asian plants and animals (including humans), crossed the land bridge into Alaska and the rest of North and South America. Today, because sea levels are higher, the Bering Land Bridge is underwater. The Bering Land Bridge is now the Bering Strait.

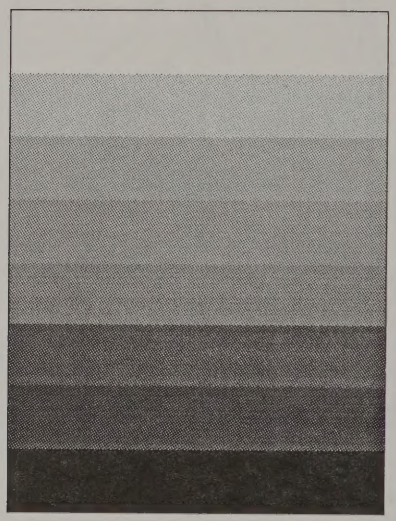
Scientists are detectives who look for evidence for what happened at a certain time and place. Some of the clues are geological, vegetational, or animal; other clues are climatic or archaeological.

Let's look at some of these clues and see how they can solve the mystery about what happened to the large animals at the end of the Pleistocene.



Timeline of Geologic Ages

Layers And Layers:
STRATIGRAPHY
(struh-TIG-ruh-fee)
The science of studying layers of materials, as in rock layers in the earth or deposits in archaeological sites, is stratigraphy. Cultural remains and dirt become buried over time. The layer on the bottom is the oldest, the layer on the top is the youngest. The dirt, of different layers, is often colored differently.
strata=layers; graph=written



When archaeologists study the layers of soil, rock, and artifacts left behind by prehistoric people, they are using stratigraphy.

Related Words:
strata

GEOLOGICAL CLUES

Geological clues can help us to discover what the land looked like thousands of years ago. During the Pleistocene, we know that Arizona had a few large, shallow lakes. We know this because we can walk on the bottoms of these lakes. They are today's playas, like the Willcox Playa in the southeastern corner of the state.

Geological evidence from northern Arizona shows us streams had more water in them during the Pleistocene. What is this evidence?

In some canyons we find rock overhangs that are full of layers of dirt carried there by water. Scientists use STRATIGRAPHY—the study and measurement of layers of dirt and other material—to make a map of the layers. Through stratigraphy, scientists can try to figure out how old the layers are by what they find in the layer. We call this dating the layers. For example, the oldest layer on the bottom of one rock overhang may contain the skeleton of a 40,000-year-old ground sloth. The top layer may contain the skeleton of a mountain lion that died two years ago. Studying layers of earth can help us discover geological clues.

VEGETATIONAL AND CLIMATIC CLUES

What plants, or **vegetation**, grow in your area today? How many native plants can you identify where you live? Are they the same plants that grew there 10,000 years ago?

By looking at the remains of ancient vegetation, we can tell what plants grew in an area at different times in the past. If we know the vegetation, we can make very good guesses of how much water those plants needed. We can also guess what temperatures were when they grew. We do this by comparing the ancient plants with similar plants that are alive today. These clues from the remains of plants can help us begin to understand the ancient climate for that area.

What kinds of evidence should we look for? What parts of plants last 10,000 years or more? Do you ever have hay fever? If you do, pollen is probably the culprit that causes you to sneeze, have watery eyes, and a runny nose. Pollen is very important to people who study ancient weather and climates. Pollen can be taken from samples of soil that date to various ages. By analyzing the pollen samples, we can tell what kinds of plants grew in that area at different times.

If we are good detectives, we can find other vegetational clues. Packrat nests provide one unlikely source of information. Packrats, sometimes called "trade rats," like to collect things. If they see an object that is more interesting to them than the one they just collected, they "trade" for it. They drop the first object and take the new one. Once a packrat has collected an object, it takes it back to its nest. At the nest, the packrat builds a pile, or **midden**, of the collected objects. The packrat then urinates or defecates (goes to the bathroom) on the midden, probably to mark its ownership. Its urine cements the objects together in a solid pile.

Sheltered places like caves or overhangs protect middens for thousands of years. When we examine packrat middens, we may find teeth, bones, and manure or **dung** of other animals. We will also find remains of plants. We can study the evidence from several middens and get RADIOCARBON dates on plants or animal bones. This will tell us if there were changes through time in the plants and animals of the area.

In southern Arizona, scientists studying packrat middens have learned that the desert was not always where it is now. Plants such as juniper and oak, which like colder temperatures and more moisture, once grew in the same places where today we find desert plants like the saguaro cactuses and palo verde trees. In northern Arizona, spruce and fir forests and grassy meadows once grew in the same places where today we find desert sagebrush and juniper trees.

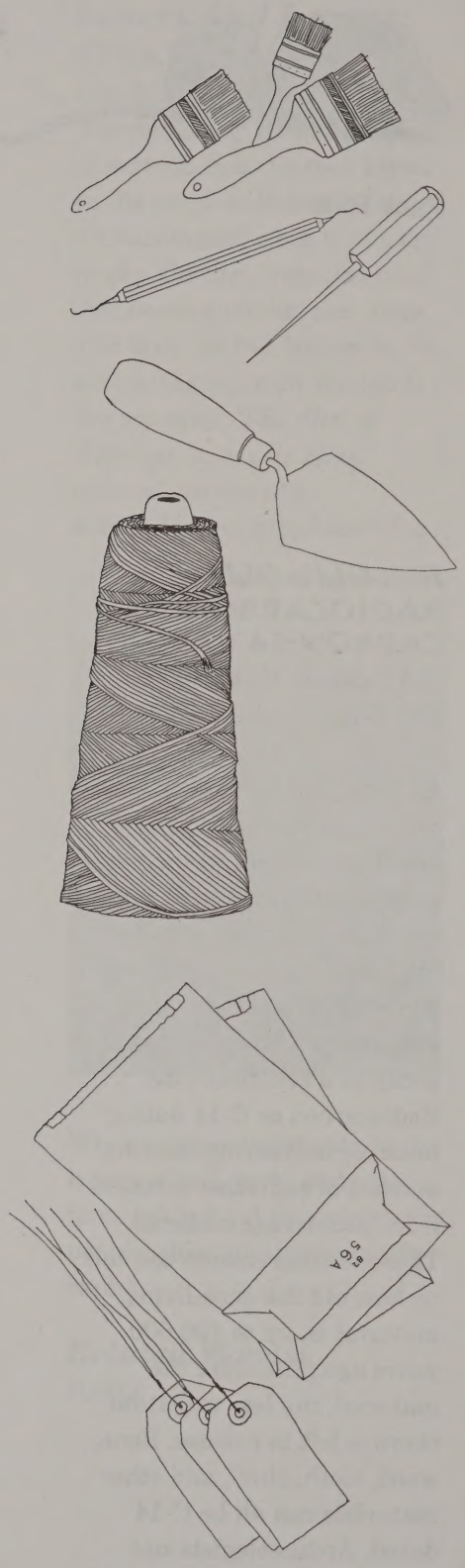


Pack Rats

How Old is Old? RADIOCARBON OR CARBON-14 DATING

(RAY-dee-oh-KAR-buhn DATE-ing)

All living things take in carbon. Some carbon contains small amounts of energy, or radiation. These small amounts of radiative carbon are called Carbon-14 (C-14). At death, the amount of radioactive carbon begins to decay at a constant rate. Radiocarbon or C-14 dating involves measuring the tiny amount of radiation released from once-living material. These measurements can tell us how old the once-living material is, up to 100,000 years ago. The older the material, the less radiation there is left to release. Bone, wood, cloth, shell, and other materials can all be C-14 dated. Archaeologists use radiocarbon dating to find out how old plant remains or animal remains are.



Archaeologist's tools
Alonzo Cahone, illus.

VEGETATIONAL AND ANIMAL CLUES

Another source of information we can study is in the dung of animals. Sheltered overhangs or caves preserve the dung the same as they preserve packrat middens. Scientists found some animal dung that is known to be 10,000 years or more old.

Have you ever considered being a "dung detective"? How can you tell which animals created the dung? To study dung, look at the size and shape of it. Is it small and rounded like a pellet or is it large and round like a softball? Is it flat and round like a pancake or medium-sized and rounded like a bun? These clues can help you recognize the type of animal that made the dung. If you can recognize what kind of animal makes what type of dung, you can find out about the types of animals that lived in a region during a given time. You can also get vegetational clues to help you learn what types of plants lived at that time.

Which animals provide the best evidence for changes in the climate—meat-eating animals (**carnivores**) or plant-eating animals (**herbivores**)? The herbivores give us the best information for climate changes through time because of the clues from the types of plants they ate. The remains of the food they ate will show up in the dung they left.

Studying dung is part of studying extinct life forms, or **paleontology**. Paleontology often includes the study of bones, teeth, and other hard parts from ancient and extinct animals. Do you know what the fossils of mammoths, camels, oxen, and bison that lived in Arizona during the Pleistocene look like? Do they live here now? Why not? Maybe their sources of food and water became scarce when the climate changed, or perhaps something else happened? Though archaeologists study only prehistory from the time of man, paleontologists also study animals as ancient as dinosaurs.

ARCHAEOLOGICAL CLUES

We think the first humans to move into North America were hunters of large Pleistocene animals, especially the mammoths and bison. Most archaeologists refer to these ancient big-game hunters as Paleo-Indians. Although we are pretty sure that the Paleo-Indians ate plant foods along with animal foods, archaeologists haven't found much evidence to know what kinds of plants they ate. Along the San Pedro River in southeastern Arizona, several places—called sites by archaeologists—have been EXCAVATED where Paleo-Indian people hunted, killed, butchered, and ate mammoths and other big-game animals.

How do you think you would hunt a mammoth using only stone-tipped spears? Paleo-Indian hunting and butchering sites give us clues as to the lifeways of these hunters. At one site, archaeologists found a Paleo-Indian camping area near a bone bed—a place where animals were butchered. Some of the pieces of stone tools from the bone bed fitted discarded broken spear points in the camp site.

PUTTING THE EVIDENCE TOGETHER

The evidence we have discussed has led scientists to think that there was a big change in the climate some time between 10,000 and 11,000 years ago. The evidence tells us that it was much drier and warmer. How do you think the change in climate affected the vegetation? How did the change affect the big herbivores?

By 10,000 to 11,000 years ago, most of the large Pleistocene animals became extinct—gone forever! What caused this extinction? Did the warmer, drier climate cause the extinction? We know that human hunters were here before the large Pleistocene animals became extinct. Did the hunters kill off the animals?



It's More Than Digging:
EXCAVATION
(ecks-kah-VAY-shun)
Carefully removing layers of dirt or sediment to find objects made by people from long ago.

Archaeologists don't dig unless they have a plan. When they do dig, they carefully plan and measure out the area they suspect people once used. Then they carefully scoop off, layer by layer, the dirt or other material that has buried the things people left behind. When they find an object or piece of an object, they carefully map the location where it was found. They study all of the other objects found in the same area in order to find out how everything was used. Then they write a report about it. This is why excavating is more than digging. Archaeologists find artifacts and clues about early people through excavation of sites where the people used to live.

Related words:
excavate, excavated, excavating

WORD LIST

☐ **carnivore** (KAR-nih-vor) Meat-eating.

☐ **carnivorous** (kar-NIV-uhr-rus) Feeding mostly on animals. *Cats, dogs, lions, tigers, and bears are **carnivorous** animals.*

☐ **dung** (duhng) Animal manure. Solid waste material passed from the bowels of animals. *Scientists study **dung** to learn what animals lived and ate in the past.*

☐ **epoch** (EP-uhk) A period of time when important things happened or an age in the history of the earth is an epoch. *The years of the Civil War were an **epoch** in the United States.*

☐ **extinct** (eks-TINKT) No longer existing or active, gone out. *The dinosaur is an **extinct** animal.*

☐ **extinction** (eks-TINK-shun) Bringing to an end, wiping out, or destruction. *Physicians are working for the **extinction** of diseases.*

☐ **glacial** (GLAY-shull) Made out of ice, icy, having much ice, or having many glaciers. *During the **glacial** period, much of the Northern Hemisphere was covered with great ice sheets.*

☐ **glacier** (GLAY-sher) A large mass of ice formed from the snow on high ground and moving very slowly down a mountain or along a valley is a glacier. *A **glacier** locks up water in the form of ice.*

☐ **herbivore** (HER-buh-vor) Plant-eating.

☐ **herbivorous** (her-BIV-uhr-us) feeding chiefly on plants. *Birds and rabbits are **herbivorous** animals.*

☐ **Holocene** (HOH-luh-seen) The period from the end of the last great Ice Age through today. From about 10,000 years ago until the present. *We are now living in the **Holocene** period of history.*

☐ **megafauna** (MEG-uh-FAW-nuh) Large animals of the Pleistoscene. *Some archaeologists study the Ice Age **megafauna** to try to figure out why they became extinct.*

☐ **midden** (MID-'n) A mound of trash is a midden. *Archaeologists study **middens** to find artifacts from people who lived at the site long ago.*

☐ **paleontology** (pay-lee-on-TOL-uh-jee) The science that deals with life on earth in earlier times or studying fossils is called paleontology. ***Paleontologists** are scientists who are experts on plants and animals that lived before humans lived on the earth.*

☐ **Pleistocene** (PLY-stoh-seen) The Ice Age(s) and period in the world's history from about one million years ago until about 10,000 years ago is the Pleistocene. During the Pleistocene, much of the earth was covered with ice. *At the end of the **Pleistocene**, huge mammals and Ice Age animals roamed in what is now Arizona.*

☐ **vegetation** (vej-ih-TAY-shun) Plant life or growing plants. *There is not much **vegetation** where there is little water.*

3 WHY DID HUNTER-GATHERERS BECOME FARMERS?

Kathleen Henderson

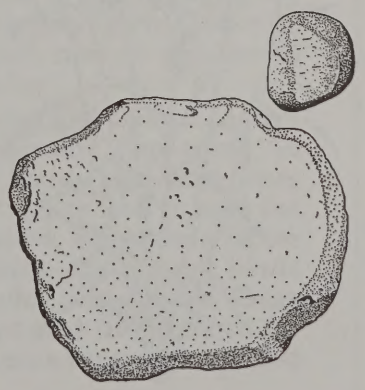
ARCHAIC PERIOD (8,000-2,000 YEARS AGO)

Archaeologists call the time from about 8,000 to 2,000 years ago the Archaic period. The Archaic people in Arizona lived by hunting animals like rabbit and deer and gathering plants like wild seeds, fruits, and nuts. In fact, plant foods were so important that archaeologists can tell where Archaic people lived and worked by finding the tools they used to crush and grind their seeds and nuts for eating.

The Archaic people used small hand stones, or manos, and large grinding stones, or metates, to crush and grind their seeds and nuts. The manos were round stones that fit in one hand. The larger metates were flat or basin-shaped slabs of stone. Seeds were put on the large stone slab surface and were crushed by rubbing the manos over them across the larger stone slab. This crushed the seeds and nuts into flour.

Archaeologists also know plant foods were important to the Archaic people because of where Archaic sites are found. These Archaic sites show up almost everywhere—near rivers and streams, in desert areas, and on mountain slopes.

Can you guess why Archaic sites are located in so many places? We know that Archaic people were constantly moving from place to place to find food. They moved from place to place to collect plant foods when they were ripe. During the spring, Archaic people picked



Mano and Metate

No Longer Wild:
DOMESTICATION
(doh-mess-tih-KAY-shun)
The process of taming or making useable for humans.

The wild grass teosinte was **domesticated** by people in Mexico and became corn or maize.

Related words:
domestic, domesticate

green leaves from sprouting plants near rivers and streams. In the summer, they moved to the desert to pick cactus fruit and gather mesquite bean pods. In the fall, they went to the mountains to gather nuts and acorns.

Around 3,000 years ago, these people's lifeways began to change. They started to live in small villages and to use a new type of food that they could grow: corn. This changed their way of life forever.

THE ORIGINS OF CORN

Did you know that corn is not an ordinary plant? It does not grow wild anywhere in the world. Corn has been changed so that it can be farmed—or DOMESTICATED—instead of gathered like wild plants.

People in what is now Mexico first domesticated corn by picking the largest seeds from a wild grass called **Teosinte** and planting the seeds. When the plants grew up, they again picked the largest seeds and planted them. These early experimenters did this year after year, and eventually (by around 5,000 years ago) a new plant—corn or **maize**—was produced.



Teosinte Grass

Can you think of other plants that were once wild and are now domesticated as crops? Imagine how the earliest farmers experimented with plants until they got a food that everyone in their village liked to eat and could grow. Some archaeologists think of these early farmers as our earliest scientists.

Because corn cannot grow by itself in the wild, someone has to plant the seeds. Knowing this, archaeologists can tell that when corn is found in Archaic sites that people had become farmers.

ADAPTING TO CHANGE

People who have lived one way all their lives usually do not like to make sudden changes in the way they live. Today, some older people resist learning how to use VCR's, computers, or calculators. They resist the

CORN
CHANGING THE LIVES OF PEOPLE

Kris Kunkel

Did you know that tomatoes, potatoes, and corn used around the world today came from the Americas? Native peoples first domesticated these plants. In fact, 60 percent of the food eaten all over the world today comes from plants that were first domesticated by American native peoples.



Neither crops nor farming began overnight. Hunter-gatherers first began working with wild plants for over a thousand years. People from the central highlands of Mexico introduced **corn** (maize) to the Southwest. The original ancestor of corn is a wild grass called **teosinte**—"God's corn." Wild teosinte cobs were very small, about thumbnail size. Teosinte was crossed with another type of wild grass—*chapolite*. Chapolite is a small-cob popcorn plant. The corn found in the Southwestern United States comes from these two types of wild grasses. This new corn is called *Maize de Ocho* or *Harinoso de Ocho*.

Corn became the food for life through precontact America. For over 7,000 years, native people domesticated hundreds of kinds of maize (corn). Over centuries, maize became part of the hunter-gatherer lifestyle. The cobs became larger and more uses were found for every part of the corn plant. Native Americans in the Southwest began to use and grow this type of corn around 300 B.C. They had been growing corn for 600 years before they began to use the *maize de ocho*.

Corn was planted in widely spaced, small hills of dirt. This allowed the people to protect the corn plants from birds and other creatures. It also kept the corn from taking all the nutrients from the soil. The following year, the people would plant the corn between the hills of the previous year. When a farmer uses a field all the time, it uses up the nutrients in the soil. The plants do not grow as well. Changing the hills let the soil stay rich and fertile.

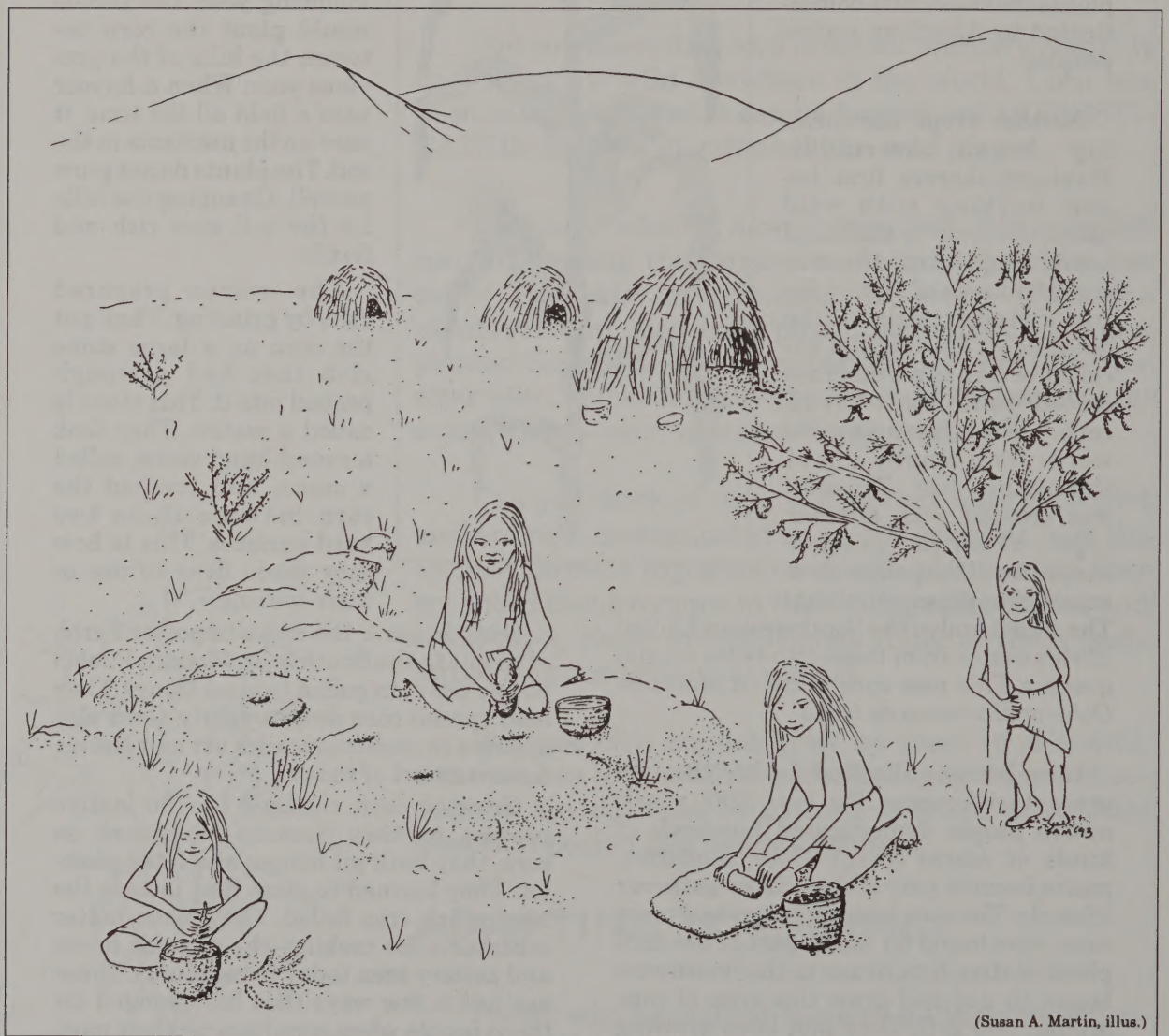
The women prepared corn by grinding. They put the corn on a large stone slab that had a trough pecked into it. This stone is called a *metate*. They took a round hand stone, called a *mano*, and crushed the corn between these two hard surfaces. This is how they made flour to use in their cooking.

Corn became the most important crop of people in the Southwest. Modern Pueblo people use corn pollen to bless things. They hold special corn dances yearly. Corn also appears in prehistoric rock art and Native American art of today.

Growing corn changed life for native peoples. As they became dependent on corn, they built pit houses and later, pueblos. They learned to store food in case the next year's crop failed. They made better containers for cooking–the ceramic bowls and pottery seen today in museums. These are just a few ways that life changed for these people when corn became their most important food.

change. The Archaic people were probably no different. They had been hunters and gatherers for over 5,000 years. After all that time, they were probably happy with the way they lived. Why, then, do you think the Archaic people became farmers?

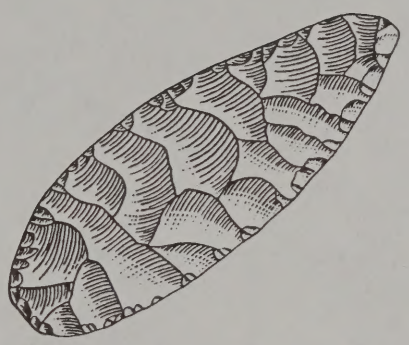
One answer may have to do with the weather and climate. During the Ice Ages or Pleistocene, it was colder and wetter in Arizona than it is now. Although the last Ice Age ended about 10,000 years ago, the weather continued to be cool and rainy until about 4,000 years ago. Then it became warmer and drier,



Food Preparation. A group of people sit close to their homes preparing and grinding mesquite beans and other plants for their meal.

more like Arizona is today. There were greater differences in the weather from year to year. Some summers were very hot and dry, while others were cool and wet. If you live in Flagstaff or Winslow, you know that winters can be very harsh. Winters in the southern deserts can be very different from year to year—mild and pleasant, or rainy, cold, and even snowy.

These differences in the weather affect growing plants. When there is rain, most plants grow and produce seeds and fruits. However, when there is no rain or a freeze, most plants die or never grow. When plants die or don't grow, there are no seeds to gather. If there are no seeds, there will be little to eat. If there is not enough to eat, some people will starve.

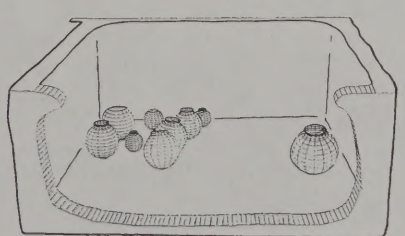


Obsidian knife

This was the problem for the Archaic **hunter-gatherers**. Because they never knew what the weather would be like from year to year, they had to find ways to make sure there was always enough to eat or they would die. Can you think of ways to make sure you have enough food?

Archaeologists have learned that the Archaic people changed their lifeway to adapt to the changing weather. We know that before 3,500 years ago, people moved over great distances to look for food. Archaeologists know they traveled great distances and traded with others because they found volcanic glass, called **obsidian** (ob-SID-ee-uhn), from New Mexico, on Archaic sites in Arizona. Obsidian was a valuable material used to make sharp stone tools like knives and spear points.

On more recent Archaic sites, archaeologists found that tools were made from stones that occurred naturally around the areas where the Archaic people lived and worked. These more recent sites also have many more tools, storage pits, and even small houses than the early sites. These clues tell archaeologists that since 3,500 years ago, people no longer wandered over great distances looking for food.



Storage Pit

Instead, the Archaic people stayed mostly in one area. Though they still moved around, they journeyed to the same places in the valleys and nearby mountain

slopes year after year. They learned where seeds, fruits, and nuts could be found, even when the weather was not very good. They knew exactly where to find everything in their areas, just as you know exactly where to find things in your local supermarket.

Some archaeologists have another idea about why people stopped traveling great distances every year. They think that when the population increased, more and more people tried to use the same sources for food. People had to compete with each other for food.

At one time, a group of people could go to a good place to gather nuts and then move on to a good place to find mesquite beans. They could gather all the beans they needed and then move on to more places where they knew they could find good fruit. The next season, they could return to the same places and again gather nuts, mesquite beans, or fruit.

However, when more people lived in the same area, this changed. When a group of people left their nut-gathering area to go gather mesquite beans, a new group of people moved in behind them and took over their nut-gathering area and the remaining nuts. When the first group arrived at the place where they gathered mesquite beans, they found other groups of people already there before them. Many of the beans would already be picked and what was left had to be shared among all the people.

This meant less nuts, beans, fruits, and food for everyone. Because of this, the people may have decided that, instead of moving and losing their gathering places, they would stay in a smaller area and guard it from other groups of people.

When the people looked for food, they picked from the plants with the most seeds or nuts. To make sure that there was plenty of food, they would pick as many seeds and fruit as they could find. They couldn't eat all of these seeds, fruits, or nuts at one time. What do you think they did with the extra food? They saved the food for later when there weren't any ripe plants or they were covered by snow. How did they save it?

The people solved this problem by creating storage pits in the earth floors of their houses. The people dug the pits with hard sticks and sharp stones. The pits had small openings, so they could be covered and protected from mice and insects. Below the ground they were wider, so that lots of seeds could be stored in them.

In addition to storing food and staying in a smaller area, the Archaic people began to grow food plants or crops instead of eating only wild plants. This probably began by accident. Many of the wild seeds that were gathered were quite small. For example, a plant called amaranth had seeds that were an important food source for the Archaic people. The amaranth seeds are only about the size of a pinhead. When picked, some of the tiny seeds would fall to the ground. In the spring, many more new amaranth plants would come up from these dropped seeds.



Amaranth

Archaeologists know that more recent Indian groups scattered some of the wild seeds they picked onto the ground. New plants grew from the dropped seeds the following year. We think the Archaic people did the same thing.

LEARNING TO CULTIVATE CROPS

If the Archaic people were encouraging wild plants to grow, does that make them farmers? Yes and no. Because the plants were wild and people did not stay around to make sure they grew, they were not really farmers. However, they certainly knew how to become farmers—all they needed were the right kinds of plants.

Corn was one of these first plants that the Archaic people used for farming—beans and squash were others. With just one seed from the right plant, you can get a plant that produces many, many new seeds. Most of the seeds could be used for food, but some could be saved for growing new plants. Remember that teosinte was a wild grass that people domesticated by selecting and scattering seeds.

Taking Care Of Plants:
CULTIVATION
(kull-tuh-VAY-shun)
The process of preparing the land and caring for growing crops. To water, loosen the soil, and weed around growing plants.

Early people in Arizona began planting corn, beans, and squash. They learned **cultivation** of these crops and were able to raise enough food from their gardens to change the way they lived.

Related words:
cultivate, cultivated, cultivating

Unfortunately, even if you plant a crop there is no guarantee that it will grow. Squirrels and birds or other animals might eat the sprouting plants. The plants might not get enough water. The temperature may change and freeze the plants or burn them. Plants, like people, can catch diseases and become sick or die. What do you think the people did to make sure their plants grew?

We know that after 3500 B.C. (about 5,500 years ago) people were no longer moving over long distances to find food. When they did move, they had a pretty good idea of where they were going. Because of this, they could scatter the wild seeds and grow plants in one place to have for the next year. They could also leave some of their people at the place where they had planted crops. These people could watch over the crops such as corn and protect them from drought, animals, and birds.

THE NEW FARMERS

This is how archaeologists think the hunter-gatherers became farmers. They left some people at one place near a water source like a stream or spring. These people planted seeds and protected the crops while they grew. The rest of the people continued to move around the countryside, gathering wild plants and hunting animals. However, in the fall, all would return to the place with the planted crops and help harvest the ripe grain. Because they split the work, there were not only wild plants for food, but also the CULTIVATED foods like corn.

In this way, the Archaic people now had two sources of food: what they gathered or hunted and what they grew. No longer did the Archaic people have to worry so much about whether they could find enough food to feed their families throughout the year. Do you think farmers or hunter-gatherers had better diets? Why?



WORD LIST

☐ **cultivate** (KULL-tuh-vayt) To raise crops. *When the early people of Arizona began planting corn and squash, they learned to **cultivate** crops.*

☐ **cultivation** (kull-tuh-VAY-shun) To prepare the land for crops by plowing, weeding, planting seeds, and caring for the growing plants. *By practicing **cultivation**, people can grow more and better crops.*

☐ **Hunter-gatherers** (HUN-ter GATH-er-ers) People who survived by depending on wild animals and gathering plants for food. *Archaic people were **hunter-gatherers** until they learned to domesticate crops.*

☐ **maize** (mayz) Corn. First developed as a natural food crop by native people in Mexico. Adopted by native people in the Southwest. The only cereal native to the New World. Its heads are eaten ripe or unripe as a vetgetable. The grains and foliage are used for animal feed. Flour, starch, syrup, alcohol, and paper can be made out of maize. *Native people in Arizona learned to grow **maize**.*

☐ **obsidian** (ob-SID-ee-uhn) A hard, dark, glassy volcanic rock that is formed when lava cools. ***Obsidian** was traded widely to make sharp knives and other tools.*

☐ **teosinte** (tay-oh-SEEN-tay) A tall, wild grass of Mexico and Central America that is considered to be an early form of maize or corn. (*teotl* = god + *cintl* = dried ears of maize) *Native people in Arizona cultivated **teosinte** until it improved and became corn.*

4 SHOPPING IN NATURE'S SUPERMARKET: THE DIET AND NUTRITION OF ANCIENT ARIZONANS

Joseph A. Ezzo

MAMMOTH HUNTING



Wooley Mammoth, a relative of the Arizona's Columbian Mammoth.

Ten thousand years ago life was very different. The people of Arizona had only wild plants or animals for food. They didn't have supermarkets like we have today, gardens to grow fruits and vegetables, or domestic animals. How did early people in Arizona find food?

The early people of Arizona, called the *Paleo*-Indians, hunted big game animals such as the mammoths and huge bison for food. The mammoths they hunted were even bigger and had much larger tusks than elephants you see in zoos today. You can probably imagine that hunting them was very dangerous and difficult.



Deer

One mammoth could feed several people for a long time. However, there were no refrigerators in which to put leftovers. There were also a lot of meat-eating animals around who would want to share your mammoth with you. Many of these meat-eating animals were not very friendly. Imagine ordering a hamburger at a restaurant and having a big, hungry wolf come up and want you to share it with him!



Pronghorn Antelope

The Paleo-Indians didn't kill mammoths every day. They didn't even get a mammoth every week or even once a month. What do you think they ate in between mammoth kills?

Archaeologists don't find much evidence of what the Paleo-Indians did when they weren't hunting



Agave



Palo Verde



Corn

mammoths. We think that they collected berries, nuts, roots, and leaves of plants. We think they hunted smaller animals, too.

CHANGING FOOD HABITS

Mammoths became extinct when the climate of North America was becoming drier and warmer. This climate change began around 10,000 years ago.

The Paleo-Indians were the ancestors of the Archaic people. The Archaic people had to learn how to hunt smaller animals, such as deer, bighorn sheep, Pronghorn antelope, rabbit, and squirrels. These people still had to spend a lot of time searching for food. When the climate became warmer, there were many new types of plants available providing them with fruits, nuts, vegetables, and leafy greens.

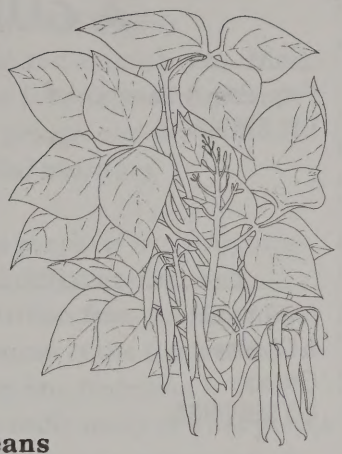
In order to survive, the Archaic people had to know a lot about the world around them. They had to know where to find bushes with ripe berries or nuts. They had to know about finding a cactus with ripe fruit. They had to know at what time of the year the fruit, nuts, and berries ripened. They also had to know which types of grass seeds they could eat and where to find those grasses. Could you go out in the woods or the desert and tell which plants you could eat and which ones you could not?

Like their Paleo-Indian ancestors, the Archaic people hunted for food, too. They learned about and understood how different animals behaved. This knowledge helped them hunt animals successfully.

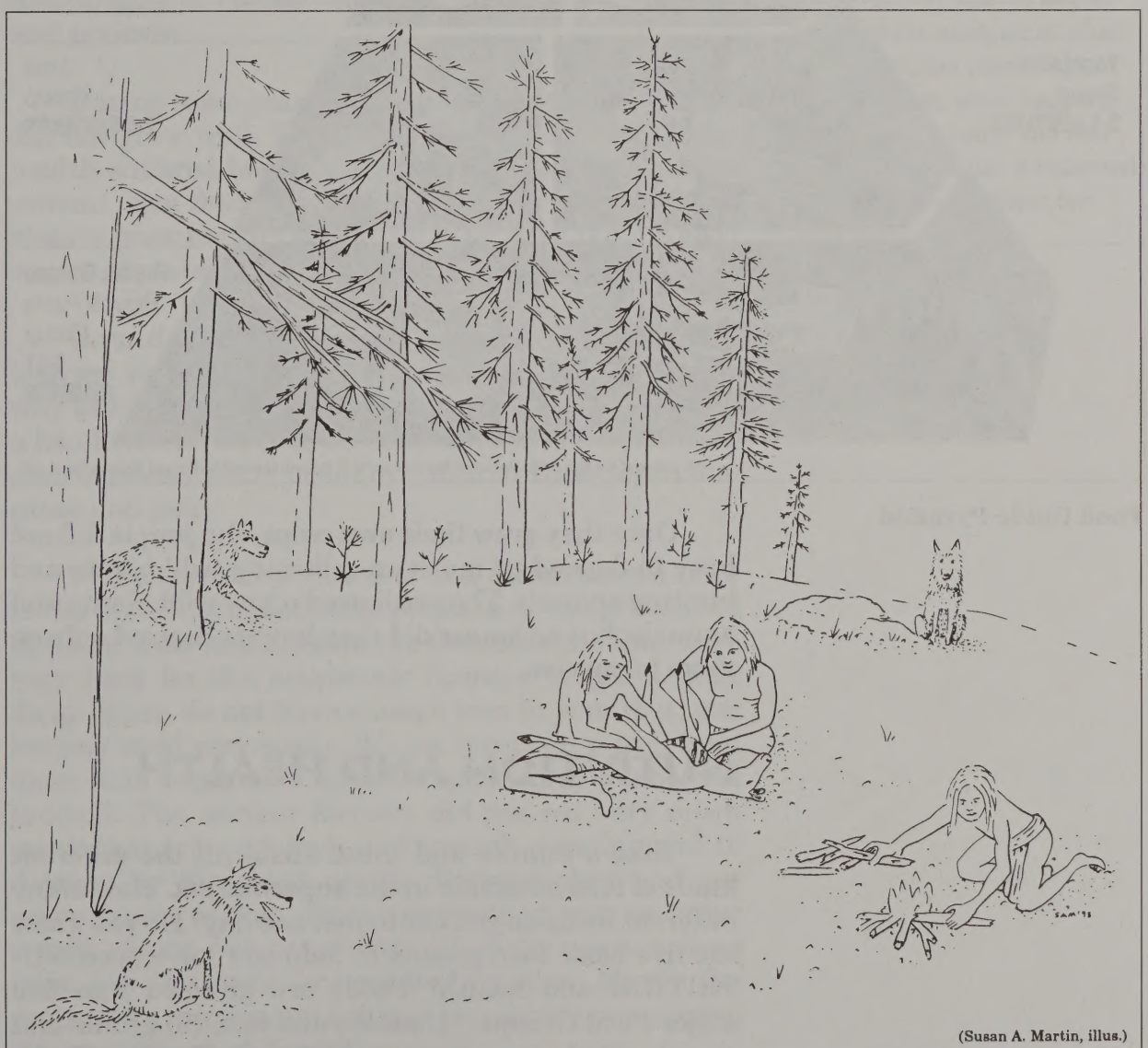
A typical supper for Archaic people might have included roasted agave hearts, boiled yucca blossoms, palo verde seed pods, Tansy mustard seeds, and amaranth greens. They might stew a rabbit or roast deer meat. Many of these foods are still being eaten by people in Arizona. In fact, doctors have discovered that these ancient foods are better for us than "modern" foods like hamburgers, pizza, french fries, and soda pop.

FARMING

Around 2,000 years ago, the people of Arizona learned to grow and harvest plants. The domestic plants they grew included corn, beans, and squash. They also used wild plants that grew along with their crops: we call some of those plants weeds today. In the southern deserts, the Hohokam grew agave in addition to their other foods of corn, beans, and squash.

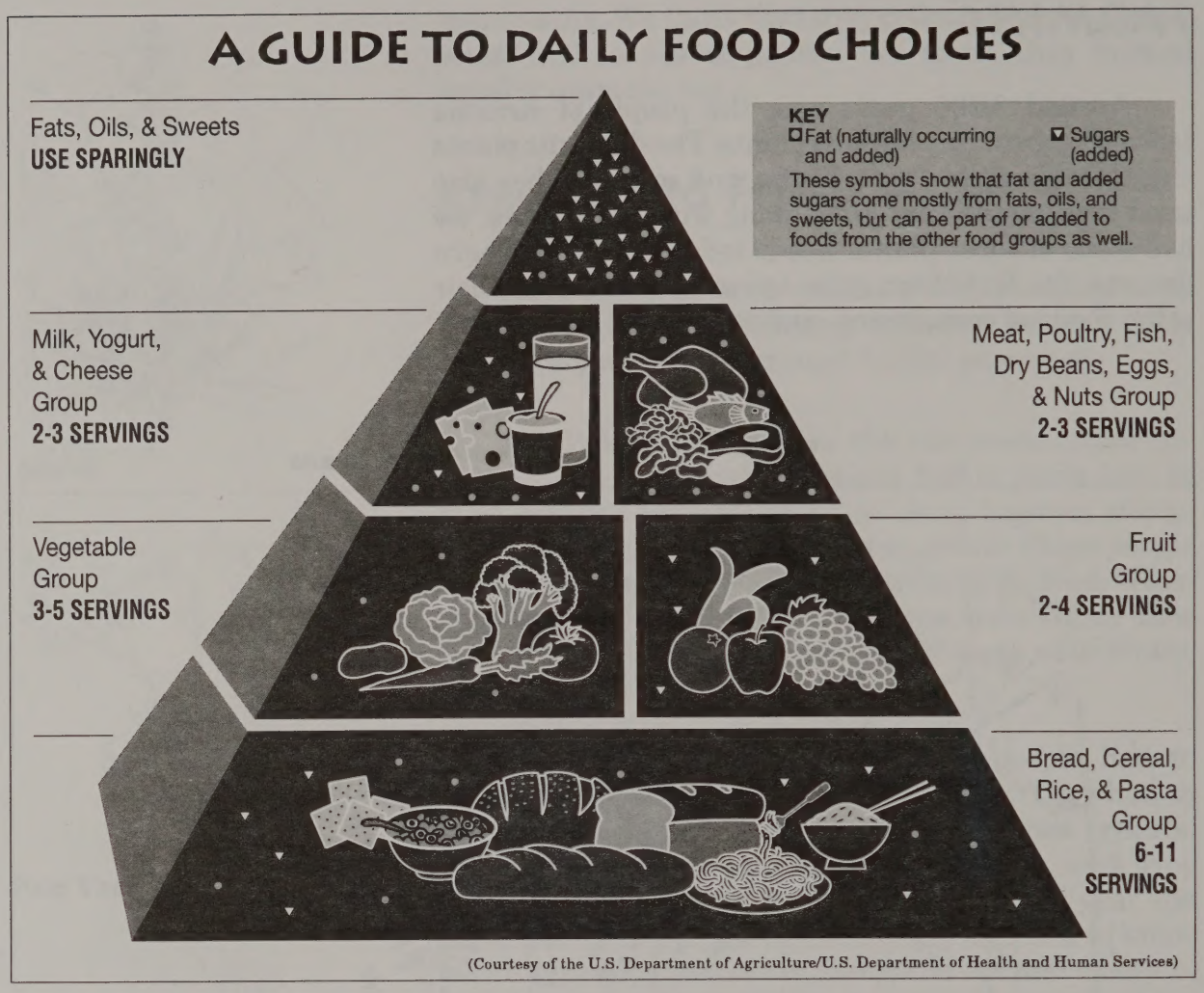


Beans



(Susan A. Martin, illus.)

Hunting scene. Hungry carnivores wait impatiently for any tasty tidbits left behind.



Food Guide Pyramid

Once they grew their own crops, the people did not have to depend as much on collecting wild plants and hunting animals. They still used many wild plants and animals, but no longer did they have to depend only on them to survive.

NUTRITION AND HEALTH

Take a minute and think about all the different kinds of food available in the supermarket. How many different foods do you eat in just one day? Do you know the five basic food groups to help you have good NUTRITION and health? Foods are grouped into five major Food Groups: (1) meats and fish, (2) grains and cereals, (3) fruits, (4) vegetables, and (5) dairy foods. What we eat is called our **diet**.

The more farming the ancient farmers of Arizona did, the less they ate a variety of foods. The early farmers in Arizona had some nutritional and health problems because of what they ate (or didn't eat). They were now eating fewer types of food than the earlier Archaic people did. Almost all the meals eaten by Arizona's ancient farmers included corn and probably beans and squash.

The only animals they raised were turkeys and dogs. We don't know if they ate dogs. They did not have cows, sheep, or pigs—those animals were brought into Arizona by the Spanish much later. Without cows, they had no milk or cheese—important sources of **calcium** and **protein**.

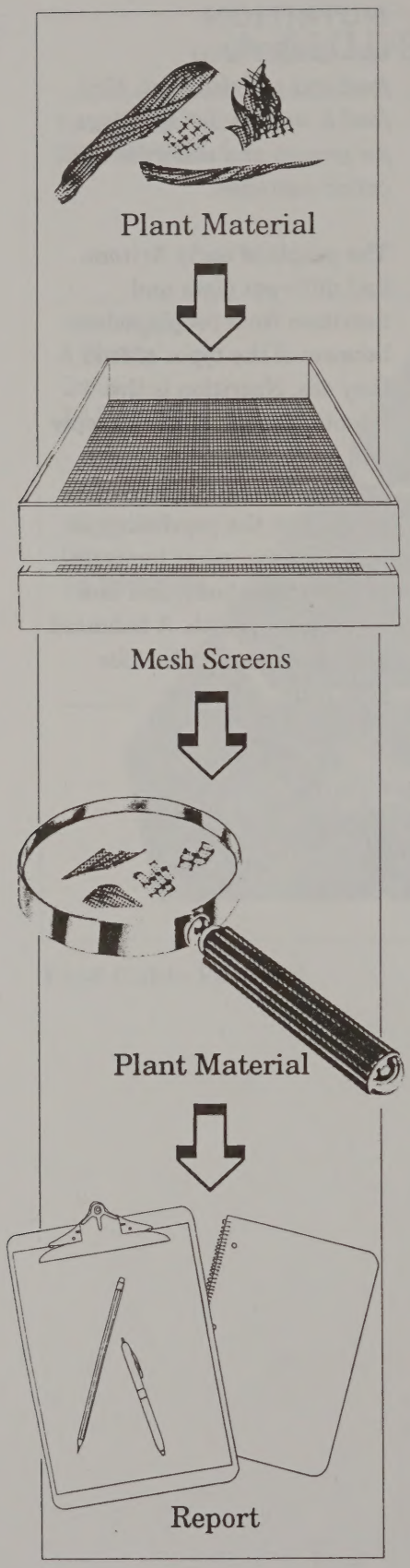
During some years, because of drought, their crops did not grow well. The people had little to eat. Their health suffered because of their diet. All people need protein from foods such as meat, milk, or eggs in our diets to grow big and strong. Corn by itself is not a good source of protein.

Corn does contain a lot of sugar. Sugar can get trapped in your teeth and cause tooth decay. That is why the dentist tells you to brush every day and not eat a lot of sweets. But the ancient Arizonans did not have dentists—so many of them suffered from tooth diseases and pain.

There are many vitamins and **minerals** we need in our diets. Corn, beans, and squash do not provide all of them. **Iron** and calcium are two minerals that were very hard for the prehistoric farmers to get in their diets. If you do not have enough iron in your diet, you become tired very easily. We get most of our iron from meat and vegetables such as spinach, eggplant and broccoli. The ancient farmers did not eat very much meat. Spinach, eggplant, and broccoli were brought to Arizona by European people. Perhaps they had another source of iron, from amaranth greens or other weedy plants. We get almost all of our calcium from milk, but the early farmers had no cows. Maybe the prehistoric farmers got calcium by sucking or scooping the marrow out of bones?

NUTRITION
(noo-TRISH-uhn)
food and nourishment. How food is used by living things for growth and energy is called nutrition.

The people of early Arizona had different diets and nutrition from people today because of the types of food they ate. Nutrition is the scientific study of what people and living organisms eat. It involves the analysis of what people eat, the psychology of why they eat, what happens to food in the body, and how diet affects health. A balanced diet provides nutrition for your body.



ARCHAEOLOGICAL EVIDENCE

How do we know all these things about the diet and nutrition of the very early Arizonans? There are scientists who study animal bones and plant remains found at archaeological sites. People who study animal bones from sites are called zooarchaeologists. They can identify different animals just from looking at pieces of their bones. This gives us information about what kinds of animals were hunted, how people butchered animals, and sometimes how people cooked animals.

The remains of plants from archaeological sites are studied by scientists called ethnobotanists (eth-no-BOT-'n-ists) and palynologists (payl-uh-NOL-uh-jists). These people receive special training to identify different kinds and parts of plants. To find the remains of plants, archaeologists put samples of dirt in bags and take them back to their laboratories. The dirt might come from the inside of a pot where food might have been stored, or from the floor of a house where tiny pieces of plants might remain.

Ethnobotanists remove parts of plants from the dirt by pouring the dirt through several mesh screens. This sifts and separates the small plant parts from pebbles and other "large" objects. Sometimes they pour the dirt into water. The plant parts float on the top of the water, while the dirt sinks. The ethnobotanist can scoop the pieces of plant off the surface of the water. Then the scientist identifies the plant pieces.

Palynologists study the fine yellow powder flowers create called **pollen**. They take out or extract the pollen from the dirt by washing the dirt in a series of strong chemicals. After getting the pollen from dirt, they look at the pollen through a microscope. What they see helps palynologists understand what types of plants people ate, what types of plants lived around them, and the kinds of climate that existed—even thousands of years ago!

Another important way to study diet and nutrition is by examining human skeletons. By carefully studying bones and teeth of these prehistoric people, we can

find out many things about them. We can discover what kinds of diseases they might have had, the kinds of foods they ate, and how old people were when they died.

One thing we have found out is that about half of prehistoric Arizonans died while they were still children. Very few lived to be as old as some of your grandparents.

Proper nutrition is very important for all of us, just as it was very important for ancient Arizonans. Unlike us, however, these early people had no hospitals to go to when they were sick. They had no grocery stores or restaurants to go to when they were hungry. They had no vitamins to buy or doctors and dentists to help heal their problems from their diets. If you were an ancient Arizonan, what do you think you would have to learn about food to survive?



WORD LIST

☐ **calcium** (KAL-see-uhm) a chemical element or soft, white metal. You need calcium to grow strong and healthy bones. Calcium is used in the tissue of plants and animals and is the fifth most common element in the Earth's crust. ***Calcium*** *is a part of limestone, chalk, milk, bone, shells, teeth, and many other things.*

☐ **diet** (DIE-et) What people and living organisms eat is their diet. Eating only certain foods and drinks to lose or gain weight or when sick is a special diet. A diet is a combination of foods and liquids that provide the necessary nutrients for the body. *The* ***diet*** *of hunters and gatherers was much different from the diet of farmers.*

☐ **iron** (EYE-ern) A chemical element and the most common metal. Iron is part of the coloring material of red blood cells that carry oxygen to the tissues from the lungs. It is the fourth most common element in the Earth's crust. *People need* ***iron*** *in their diet to help them stay healthy.*

☐ **mineral** (MIN-er-uhl) A chemical element necessary in a healthy diet. Minerals are naturally occuring substances that are not plants, animals, or other living things. Minerals make up rocks of the Earth. *Sand, stone, salt, sulfur, petroleum, water, or natural gas are* ***minerals****.*

☐ **pollen** (PAHL-uhn) A fine, yellowish powder released from flowers. Grains of pollen are carried by the wind, insects, or hummingbirds to the pistils of flowers and fertilize them. Windblown pollen is smooth and light. When insects or humingbirds carry pollen, it is often heavy and sticky. Fossilized pollen can be used to investigate the plants of prehistoric times. *Allergies are often caused by breathing the fine **pollen** released from flowers.*

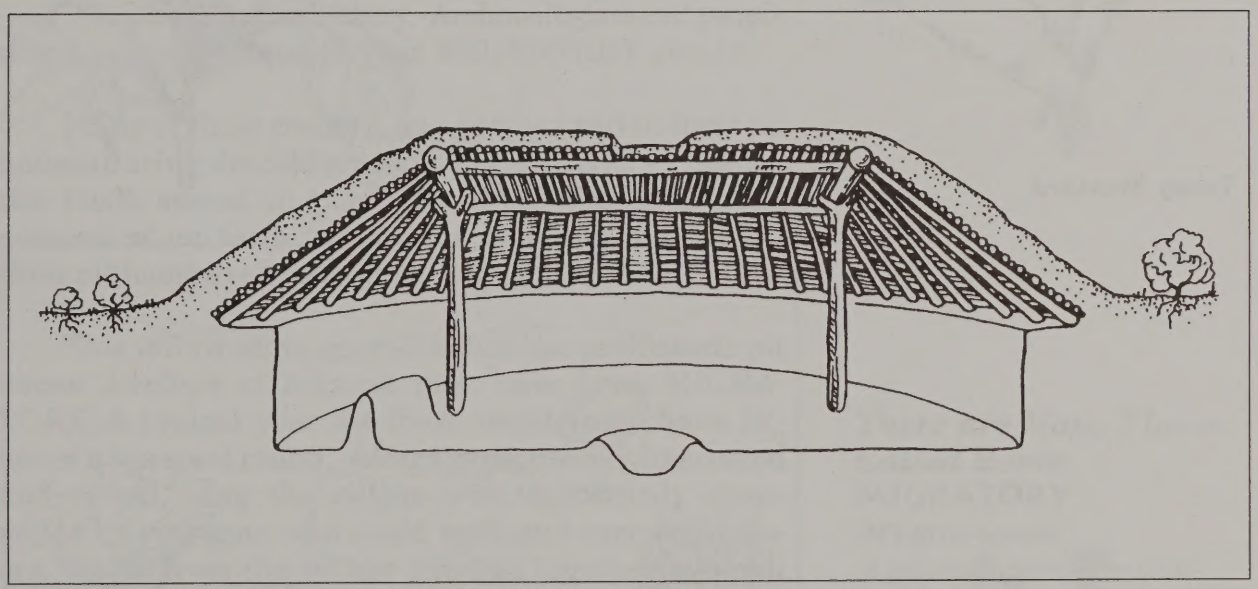
☐ **protein** (PRO-teen) An important part of all living cells. Protein is a nutrient containing nitrogen that is necessary for life. It must be part of the human diet in order for people to survive. Foods such as meat, milk, cheese, eggs, and beans contain protein. ***Protein** is one of the three necessary types of energy foods.*

5 HOW SETTLED WAS VILLAGE LIFE?

Lisa Young

ARIZONA'S FIRST VILLAGES

The first villages in Arizona were built sometime between 2,000 and 1,500 years ago. Archaeologists call the houses in these early villages, **pit houses**. They are pit houses because they were built by digging into the ground to make the floor and part of the walls.



Pit House. Archaeologists call the houses in these early villages pit houses.

Where the winters were long and cold, the pit houses were built very deep in the ground. They were covered with a roof made of logs, bark, and a thick layer of mud. Many had floors of dirt or stone. The walls were dirt and sometimes were covered with clay plaster or with matting.

Why were deep pit houses with thick roofs important in cold, long winters? In the southern Arizona deserts, the pit houses were shallow with thin walls and roofs. Why do you think they were made differently?

The people living in pit houses grew corn, beans, and squash. These early farmers also used many of the wild plants that grew in and around their fields. They even used plants that most of us call 'weeds' today. Some of these plants used by early farmers were the amaranth, tansy mustard, and bee weed. They were collected for their green leaves and seeds.

Some of the corn, beans, and wild plants were dried and stored in storage pits built into the ground. These stored foods were used during times when fresh foods were hard to find.



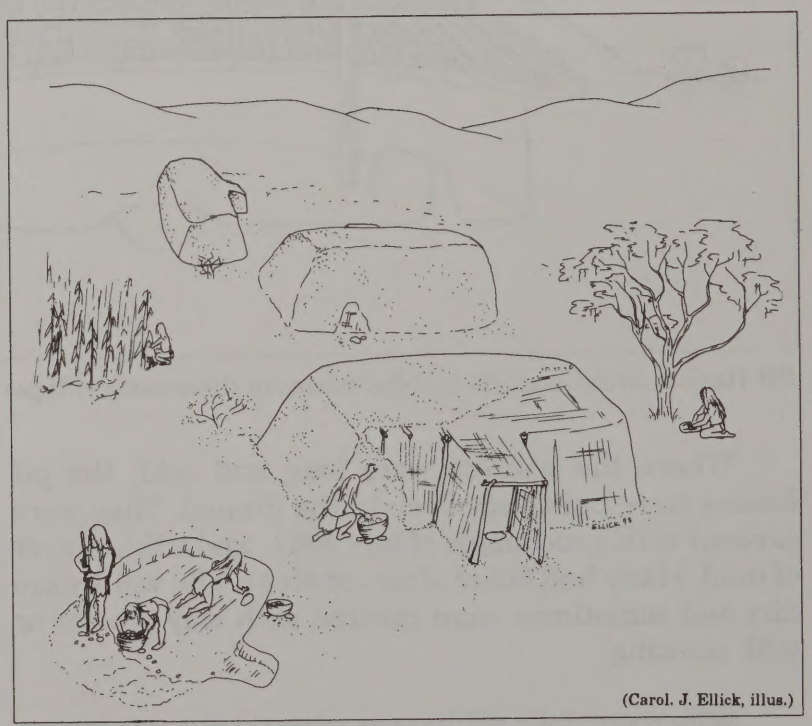
Tansy Mustard



Amaranth



Bee Weed



Making a Pit House. Building a house took a team effort. First a pit had to be dug using digging sticks, then the framework was built with a coating of mud smoothed over the surface.

Archaeologists once assumed that these farmers stopped moving from place to place because they needed to stay by their fields. Recently, archaeologists have begun to question whether these people lived at their pit house villages all year round. Some archaeologists think the villagers continued to move or migrate part of the year.

SEASONAL VILLAGES

To get some idea of how prehistoric pit house dwellers in Arizona might have lived, archaeologists studied information written about other people who lived in pit houses in different parts of the world. They found most of these people did not stay in pit houses all year. They were not sedentary. Archaeologists call people who live in one place all year, SEDENTARY people.

Many of these modern-day people lived in their pit houses during the cold season. This is when they needed the foods stored in pits near their houses. During seasons when fresh foods could be found, people left their pit houses to hunt animals and gather wild plants.

This information suggests that the prehistoric pit house dwellers of Arizona may have been MIGRATORY. A typical year for these people may have followed a seasonal round. After the crops were harvested and stored, then the village was temporarily abandoned by everyone who could walk and carry containers. People from the village traveled together in small groups to hunt for animals and gather the many wild plants available in the fall. As winter approached, they would return to their village because wild foods were difficult to find. During winter and into the spring, the villagers kept warm in their pit houses and ate the food they had stored during the summer and fall. Corn and beans were planted in the spring. A month or two after planting, some of the villagers may have left for a brief hunting and gathering trip. They returned in time to help with the harvest and start the yearly cycle again.

There's No Place Like Home:
SEDENTARY
(SED-'n-tair-ee)
settled, not migratory; doing or requiring much sitting; or, permanently attached.
(sedere=to sit)

After early people learned how to farm, people stayed in one place and became **sedentary**.

There are Many Places Called Home:
MIGRATORY
(MY-gruh-tor-ee)
A group that moves or wanders from place to place with the seasons.

The early people in Arizona lived a **migratory** way of life to find food. They lived in one place in one season and moved to another place in the next season.

Related words:
migrate, migration, migrated, seasonal round

WHY BECOME SEDENTARY?

Archaeologists know that the prehistoric people in what is now Arizona first moved from place to place, and then slowly became more sedentary over time.

By about one thousand years ago, many people in Arizona were sedentary and lived in their villages all year round. However, this change was probably never complete. Some people continued to leave their villages during certain seasons to hunt and gather.

Even today some people in Arizona still move during different seasons of the year. Many retired people only live in Arizona during the winter months and move or migrate to other states during the summer. Others move from southern to northern Arizona at different seasons, depending on where they want to be in warm and cold weather.

Why did prehistoric people become sedentary? This is a difficult question to answer because people became sedentary at different times and places. There are probably many reasons for this change. For example, when the population grew, it was sometimes difficult to find areas to hunt and gather that others had not already claimed for their own. People may have been forced to get more out of the land around their village by planting more crops and using more of the food sources around their villages. With more crops to take care of, the villagers needed to stay at their village for longer periods of time.

Another reason people became sedentary may have been that more of their food came from domesticated crops that they planted. When people first began farming, they did not stay near their fields and in their village all year. But once people began to depend on crops for more than half of their food, they probably needed to be sedentary. They spent much more time preparing fields, planting, weeding, getting water to their fields, and guarding them from animals and birds. Being near their fields meant they had to stay in one place most or all of the year.

Some areas in Arizona, such as some parts of the Sonoran Desert, may have had more wild foods available for hunting and gathering than others. Villagers who lived in these **environments** did not need to move seasonally. Instead, they could go out during the day to hunt animals and gather wild plants, and return to the same place every night.

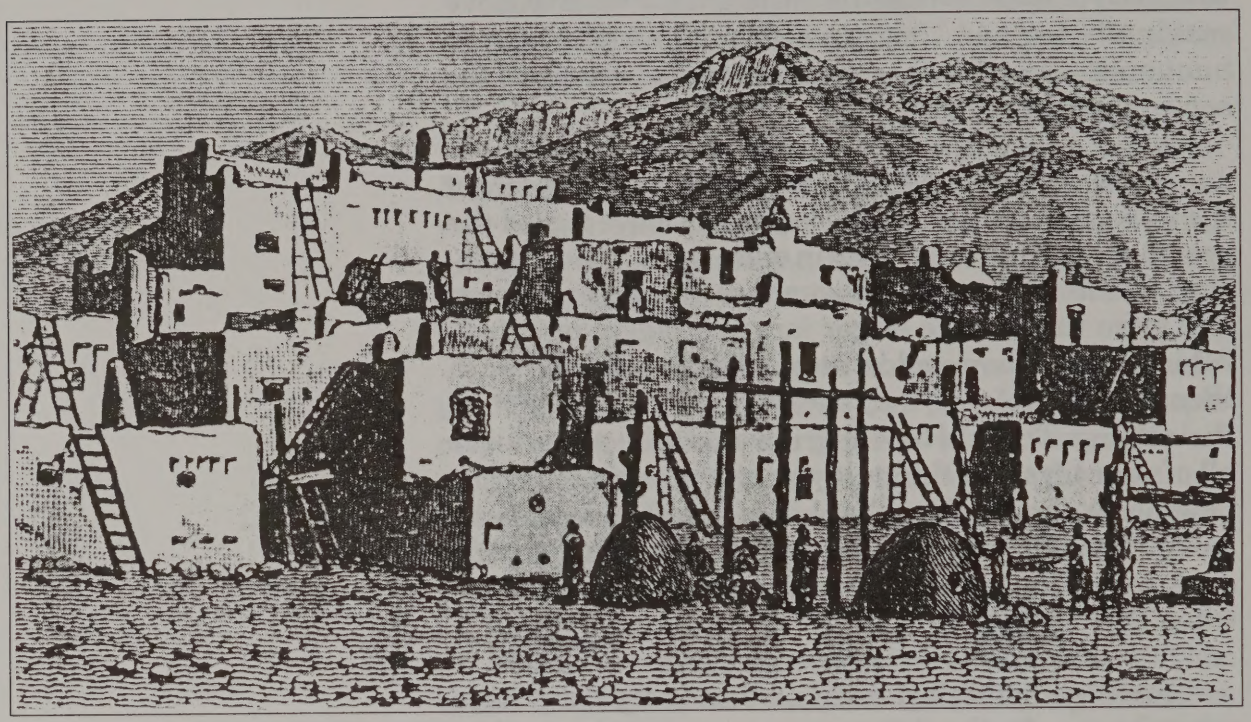
Some archaeologists also think that if the leaders of the villages were powerful, they might have forced the people of their village to stay in one place. Other archaeologists think that people began to make and want more and more things (like larger jars and bigger metates). After a while, they couldn't carry all those things with them. Because of this, they stayed in one place to protect their things. Think of how long it would take you to move all of your toys and things if you had to carry them to a new home! Remember, there were no cars, trucks, or moving vans back then—or even horses, mules, and donkeys. Everyone had to carry everything themselves when they moved.

Finally, archaeologists think that groups may have started to **trade**. People began to grow or make particular things that could be traded for other things from farther away that other people had. Trade items could be food, jewelry, crafts, tools, or things to make them with. For example, dried bear meat or obsidian from the mountains could be traded to people living in the desert for dried saguaro fruit and shell jewelry. If people stayed in one place, they could guard and make their trade items and use them to get things they wanted from other areas.

CHANGES IN THE COMMUNITY

As the prehistoric people in Arizona became more sedentary, their lives changed. The Mogollon and Anasazi people changed the types of houses they lived in. Instead of deep pit houses, they began to build above-ground apartment-like buildings called **pueblos**. Pueblos were easier to add onto than deep pit houses. Pueblos made of stone last longer than pit houses and their roofs are

easier to repair. All of these things were important to people who planned to live in a house year-round and for many years.

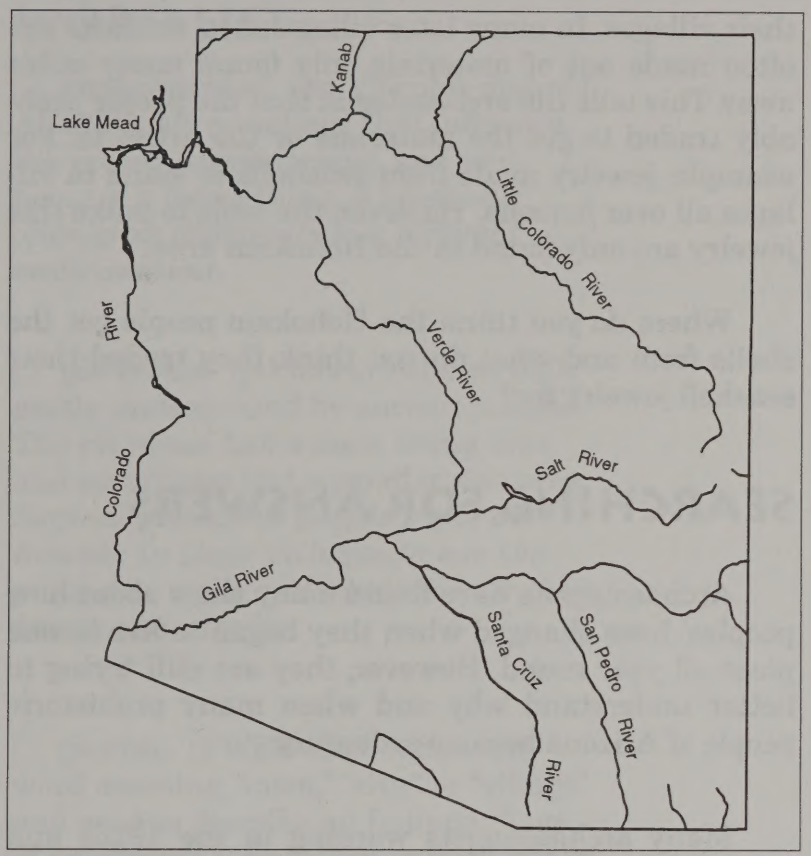


Pueblo. Pueblos made of stone last longer than pit houses and their roofs are easier to repair.

Although wild foods were still used by these sedentary people, corn and beans made up the largest part of their diet. Because corn was so important, these farmers developed ways to help guarantee large and successful harvests.

Most of Arizona's climate is dry. Rainfall often can't be forecast beforehand. Because of this, farming has always been difficult in this area. Harvests were poor during years of little rainfall. Serious droughts meant a year or more of hunger for these people.

To help solve this problem, those who did not live near rivers built small dams to catch rainwater before it washed away. These dams allowed more of the water to soak into the fields, rather than running off them. Supplying crops with water, or irrigation, required a lot of work. Irrigation made harvests more reliable. The Hohokam began to build canals and ditches to get water from the rivers to their fields.



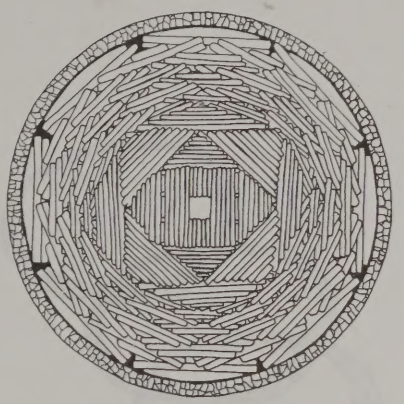
The Rivers of Arizona

The Hohokam people lived in the southern deserts near rivers such as the Salt and Gila, where it was very dry. By using irrigation, the Hohokam solved the problem of too little water.

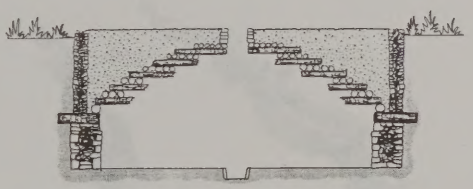
Another part of village life that changed as people became sedentary was their religious and community life. Archaeologists found that one thousand years ago, most villages had a special room or structure used for ceremonies and other types of community gatherings. The Mogollon and Anasazi used special rooms or structures built below the ground called kivas. The Hohokam used different types of ceremonial structures called ballcourts and platform mounds.

If you were an archaeologist, what evidence would you look for to find out if these places were used for religious ceremonies?

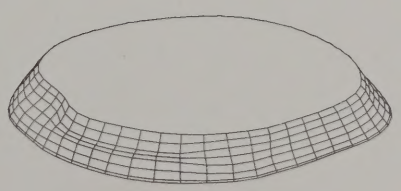
As the people became more sedentary, they began to develop more trade with people at longer distances from



Kiva roof

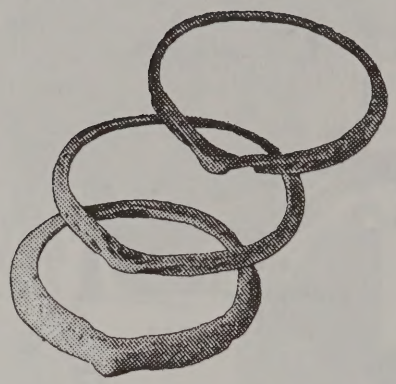


Kiva cross-section



Platform mound

their villages. In many later village sites, artifacts are often made out of materials only found many miles away. This tells the archaeologist that the people probably traded to get the materials or the artifacts. For example, jewelry made from seashells is found in villages all over Arizona. However, the tools to make this jewelry are only found in the Hohokam area.



Where do you think the Hohokam people got the shells from and what do you think they traded their seashell jewelry for?

SEARCHING FOR ANSWERS

Archaeologists have found many clues about how peoples' lives changed when they began to live in one place all year round. However, they are still trying to better understand why and when many prehistoric people of Arizona became sedentary.



Seashell jewelry

Many archaeologists working in the 1920s and 1930s thought that people who grew crops were sedentary. Today we know of many examples of historic Native American groups and others around the world who farmed and moved around during parts of the year. Some good examples of people in historic Arizona who farmed and didn't live in their villages throughout the year include: the Tohono O'odham people of southern Arizona; the Havasupai who live in the Grand Canyon; and the western Apache who live in the White Mountains.

There are many reasons why prehistoric people in Arizona became sedentary. Think about the prehistoric villages in the area where you live. If you were a farmer, but still ate a lot of wild plants and animals, when would you plant your crops? When would you leave your village to hunt and gather? What would make you give up a nomadic way of life to live in your village all year round?

WORD LIST

☐ **environment** (en-VY-ruhn-muhnt) All of the surroundings that influence the growth, development, and well-being of a living thing. *A plant will often grow differently in a different* ***environment.***

☐ **pit house** (pit hows) A home built partly underground by ancient peoples. The pit house had a main living area and sometimes had a smaller side area. *Several groups of people built* ***pit houses*** *in their villages to use the ground as walls and insulation for their homes and supplies.*

☐ **pueblo** (PWEB-low) A Spanish word meaning "town," "city," or "village" and used to describe an Indian village of apartment-type buildings with one or more stories and the people who live in them. Pueblos are built of adobe and stone and have flat roofs. *Some Anasazi* ***pueblos*** *are built into the sides of cliffs.*

☐ **trade** (trayd) Buying, selling, exchanging or bartering goods. Archaeologists know that trading went on among ancient people because they found items people used from other far away places. *The trader brought shells from the ocean to* ***trade*** *for turquoise, obsidian, or pottery.*



6 WHY ARE THERE INDIAN RUINS IN ARIZONA?

J. Jefferson Reid

To many people who visit our state, Arizona is the place to see Indian ruins. They think of them as ancient, romantic places where mysterious things happened.

What do you think Indian ruins are? They are the abandoned villages of the Native American people of Arizona. What you probably didn't know is that the people who built and lived in the villages that are now ruins were not all the same. They belonged to several different ways of life or cultures. They spoke different languages and had different traditions from one another.

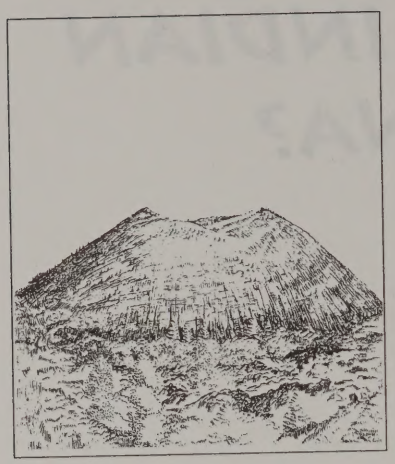
So, perhaps instead of asking, "Why are there Indian ruins in Arizona?" we should be asking, "Why did the prehistoric people of Arizona leave their homes and abandon their villages—never to return?"

Let's start with one of the oddest ideas.

EXTRATERRESTRIALS

In recent years, there has been much excitement over the idea that beings from outer space, called **extraterrestrials**, visited the prehistoric people of Arizona. Could extraterrestrials have given these people the ability to build cliff dwellings and to dig irrigation canals? Could extraterrestrials have caused villages to be abandoned?

As thrilling as these possibilities may seem, there is absolutely no evidence for prehistoric visitations from outer space. Moreover, relying on extraterrestrials as an explanation for the achievements of the prehistoric people of Arizona is not only false, it is also **prejudiced**. Such ideas are unfair and they deny the



Sunset Crater. In A.D. 1064, this volcano erupted north of Flagstaff, AZ. It blackened the sky with dust and blanketed the ground for hundreds of square miles with cinders and ash.

facts that the Native Americans were capable of and did build many wonderful structures. We know that these people weren't whisked away in space ships, because they are the ancestors of people who live here today.

If extraterrestrials didn't cause the abandonments, then what did?

CATASTROPHIC EVENTS

When you stand on the remains of a prehistoric village you may think that some powerful, terrible force must have driven the people away. We know for certain that several times in the past natural **catastrophes** caused village abandonments in Arizona.

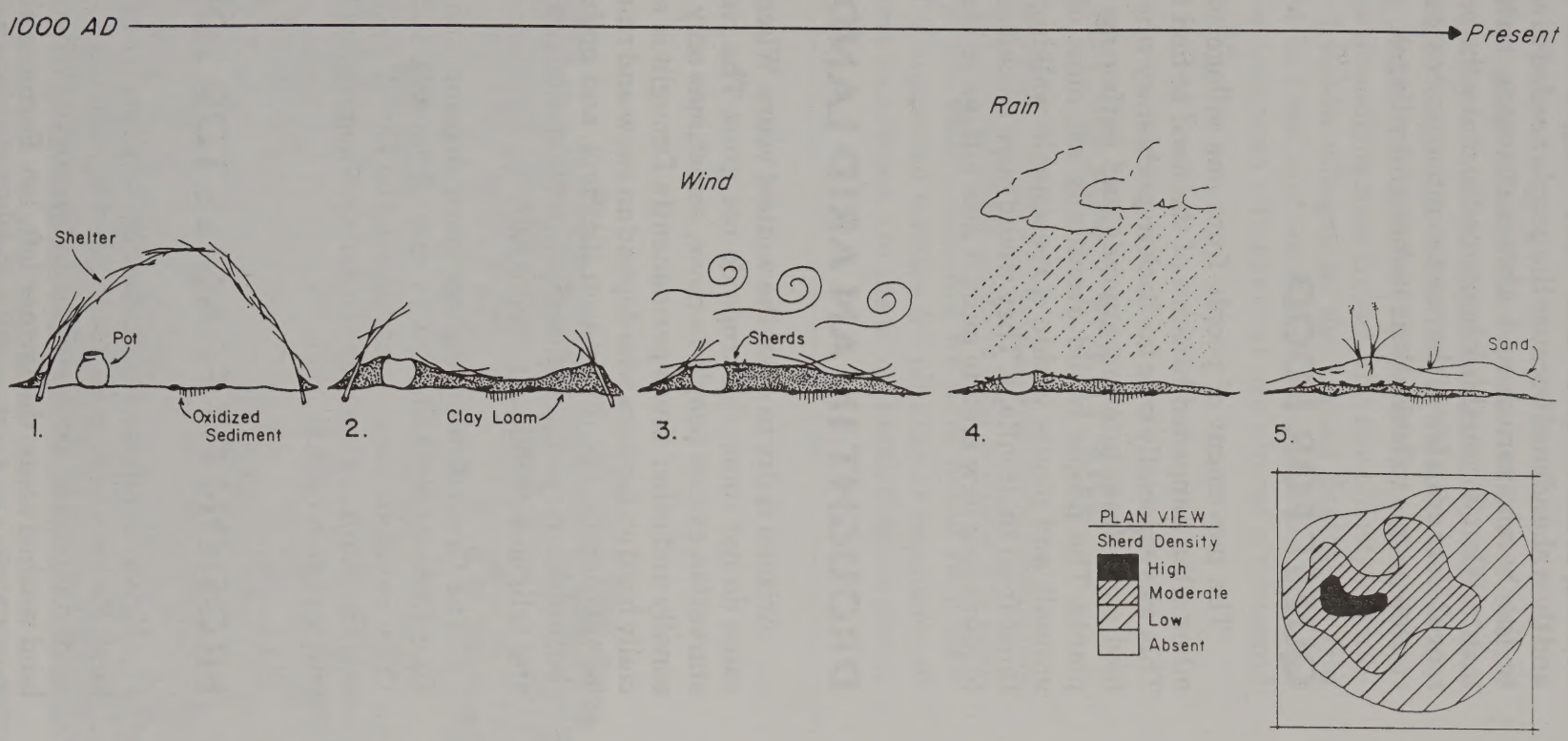
Sunset Crater, a volcano north of Flagstaff, erupted about the year A.D. 1064. It blackened the sky with dust and blanketed the ground for hundreds of square miles with cinders and ash. Whole villages were buried under the ash. However, most villagers apparently had enough warning to escape.

Discovery and excavation of wooden beams from the buried houses in villages near Sunset Crater provided archaeologists with tree-ring dates using DENDROCHRONOLOGY. These dates show us that the volcano eruption took place in the year A.D. 1064.

Another catastrophe occurred almost three hundred years after Sunset Crater erupted. In the Arizona desert, along the Salt River on the southern edge of present day Phoenix, many villages were abandoned when fields, irrigation canals, and even houses were washed away or buried by the Great Flood of A.D. 1358.

ADAPTING TO THE ENVIRONMENT

Although we know that catastrophic events like volcanic eruptions, floods, earthquakes, and fires occurred, we don't think that those types of events were responsible for the abandonment of most of the villages.



(Carol J. Ellick, illus.)

HOW DID THE SITE FORM?

Archaeologists use evidence to work backwards and reconstruct what the site would have looked like when it was in use. Number 1 shows a house with a ceramic pot on the floor and a hearth. Number 2 shows the house falling apart, the pot is breaking, and the clay loam sediment (dirt) is blowing in. Numbers 3 and 4 show the effect of the wind and rain. Number 5 shows the site that archaeologists find.

(Used with permission from *On the Bajada: Archaeological Investigations on Davis-Monthan Air Force Base*, Tucson, AZ. Statistical Research Inc., 1993)

***Count Your Tree Rings:* DENDRO-CHRONOLOGY**
(Den-dro-kruh-NALL-uh-jee)

The science of dating events and weather patterns in former times by studying growth rings in trees. Determining the age of a tree by counting its rings. The study of tree-ring dating.

(Dendro=tree; chrono=to measure; ology=study of; chronology=an arrangement of events in the order that they occurred.)

Instead, archaeologists think that villages were built and then abandoned because the people needed to adapt to the harsh, varied, and always-changing environments. What do you think happened to make the people move? Here are a few of the most common processes that caused people to leave their homes and villages.

QUEST FOR FOOD

The movement of people from one village to another often happened because of the need to find food. This was especially true far back in prehistory when all food came from hunting animals and gathering wild plants. The people would eventually eat most of the animals and plants within a reasonable walking distance from their village. They would have no choice but to move to a new area to build a new village or starve.

DROUGHT IN AN ARID LAND

Arizona is dry in even the wettest years. When the rains do not come, the crops do not grow. The risk of starvation causes people to move, sometimes only seasonally and other times permanently. Drought is especially hard on farmers who depend on snow and rainfall for their crops. For this reason the Hopi, and probably the prehistoric people before them, have special prayers and religious practices to bring rain.

The Great Drought of northern Arizona and the Four Corners region lasted 24 years from A.D. 1276 to 1299. Some archaeologists believe the Great Drought was the main reason why the Anasazi abandoned that entire region by A.D. 1300.

EROSION OF FRAGILE TOP SOIL

Erosion affects the farmer by washing away the land. Fields where corn, beans, and squash once grew were replaced by deep gullies and **arroyos**. When the land washed away, the farmer left, too. Farmers abandoned homes and villages in search of new farm lands.

DISEASE

You might think that disease could have been a major cause of village abandonments. We think that although the people were not as healthy as we are today, disease seems to have played only a minor role in village abandonments. In fact, the two oldest, continuously lived-in villages in the United States are Old Oraibi in Hopi and Acoma in New Mexico. Both are Native American villages that are almost a thousand years old.

RAIDING AND WARFARE

Hollywood images of Native Americans as warriors have led many people to think that warfare was common in prehistory. Actually, we have found very little proof of organized warfare for plunder or expansion of territory in Arizona. On the other hand, there is plenty



Oraibi Pueblo around A.D. 1915. (Photo courtesy of the Museum of New Mexico Photo Archives. Neg. no. 87313)



Acoma Pueblo around 1904. (Photo by Edward S. Curtis. Courtesy of the Museum of New Mexico Photo Archives. Neg. no. 144511)

of evidence for raiding on a small scale by only a few people at a time. These raids were probably conducted for food and captives, or for revenge over the murder of a relative. Many small, burned villages that archaeologists have excavated probably were abandoned because of raids for food and captives.

Archaeologists once thought that Apache and Navajo raids caused the abandonments of many of the large pueblos in northern Arizona. However, we now think that the Apache and Navajo cannot be held responsible for these abandonments. Archaeologists don't think they were in Arizona until historic times, in the A.D. 1540s or later (300 to 450 years ago). Apache and Navajo beliefs about their origins are different from those of archaeologists.

LOOKING AT THE RUINS

When you gaze upon an abandoned village in Arizona you are looking at the remains of success rather than failure. The village ruins show us a people who successfully adapted to a changing environment by moving to another place when they had to. There were natural catastrophes such as the eruption of Sunset Crater in the year A.D. 1064 and the great Salt River flood of A.D. 1358, but these were rather rare events that cannot explain all of the many ruins.

We think the real causes of ancient Arizonans leaving their homes and villages are the normal, natural processes that affect all peoples at all times. These natural processes certainly affect us in Arizona today. Many of us move around a lot. Some of us may move within our life times more often than the prehistoric people did. What happens to abandoned buildings and towns in modern Arizona? Perhaps 500 years from now, someone standing on the ruins of your house or school will think, "How romantic! I wonder what happened to the people who used to live here?"



WORD LIST

☐ **arroyo** (uh-ROY-oh) Spanish word meaning stream, brook, small river or the dry bed of a waterway in the Southwest part of the U.S. *They followed the **arroyo** through the canyon.*

☐ **catastrophe** (kuh-TAS-truh-fee) A sudden, terribly bad event that happens. *An earthquake, tornado, flood, or big fire is a **catastrophe**.*

☐ **erosion** (ih-ROH-zhun) an eating away; being worn away little by little. *The riverbanks change because the water **erosion** keeps tearing away pieces.*

☐ **extraterrestrial** (EKS-tra-tuh-RES-tree-uhl) Coming from outside of the earth. *Does **extraterrestrial** life exist?*

☐ **prejudice** (PREHJ-uh-dihs) An unfair opinion; forming an opinion without taking the time and care to fairly judge; causing damage or harm to something or someone by the action of another. ***Prejudice** exists because people form opinions about other people before they know the facts.*

7

WHEN CORONADO HIT THE TRAIL: WHO WAS THERE AND WHO WAS VISITING

Jim McDonald

"There were so many men of such high quality . . . that such a noble body was never collected in the Indies." So Pedro de Castañeda described the members of an **expedition** gathered in the town of Compostela, Mexico, in A.D. 1540. Led by Francisco Vasquez de Coronado, they marched north in search of the Seven Cities of Cíbola. Castañeda was the expedition's official historian. The journey of Coronado and his followers forever changed life for the Indian people of Arizona.



Coronado's Expedition. (Mural painting by Gerald Cassidy. Photo courtesy of the Museum of New Mexico Photo Archives. neg. no. 20206)

CORONADO'S JOURNEY

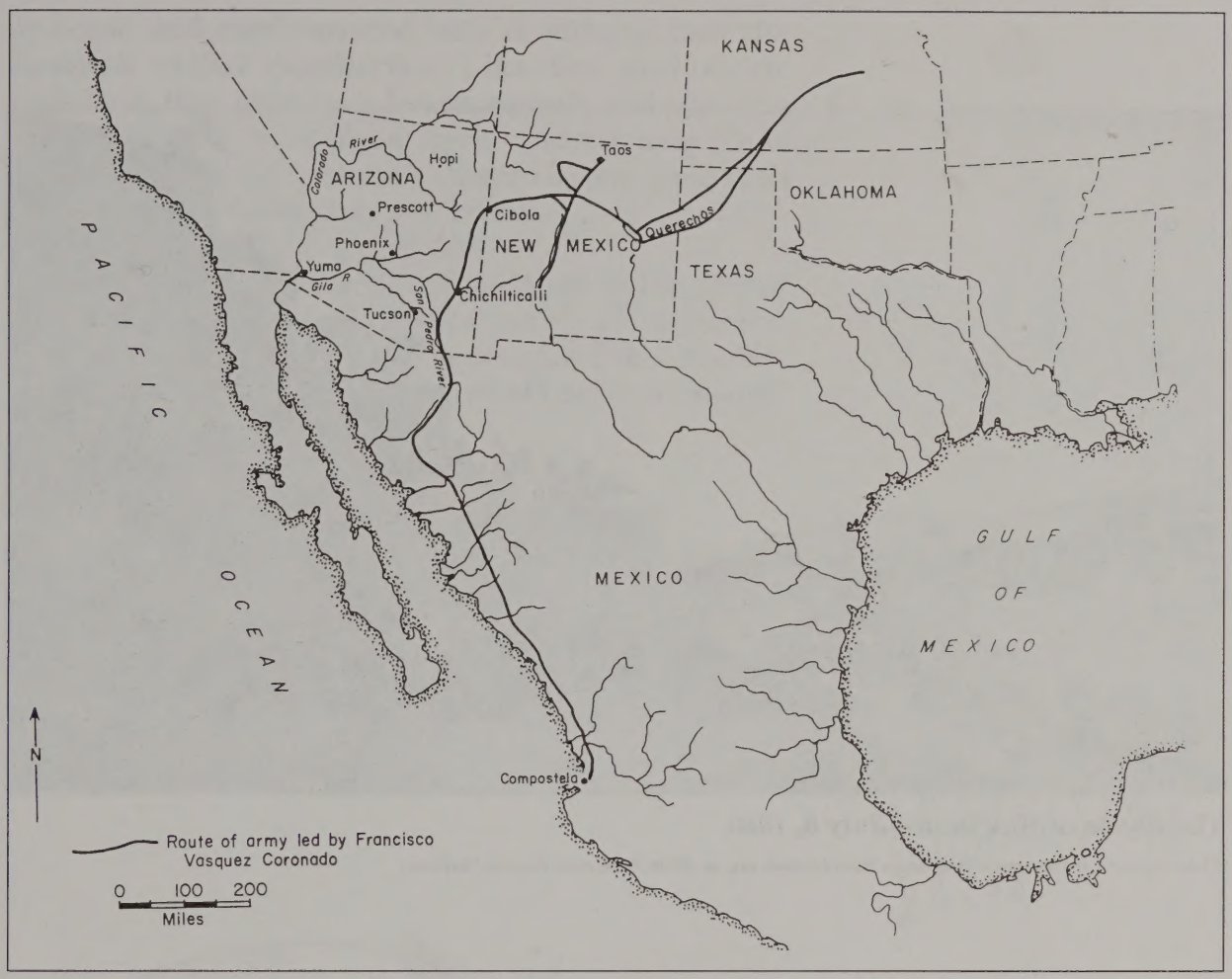
The legend of the Seven Cities of Cíbola began with a Spanish tradition. The legend said that seven church leaders or bishops fled Spain in the eighth century. Each of these men founded a city in a distant land. The legend came alive again in Mexico by the stories of Tejo, an Indian servant of a Spanish official. Tejo told of a childhood trip with his father to trade with seven cities to the north that were full of gold and jewels. These were actually small villages—southwestern pueblos—described in stories passed from tribe to tribe over a long period of time.

The legend of Cíbola became stronger when survivors of a 1528 shipwreck heard stories of large and powerful villages to the north that were filled with gold and jewels. After they landed on the Texas coast, the four Spanish survivors were taken as prisoners among the Texas tribes. Alvar Nuñez Cabeza de Vaca and three others spent several years as prisoners. They finally escaped in 1536 and made their way on foot along Indian trails to Culiacán, Mexico. On the way, Cabeza de Vaca's group heard the stories of the powerful, wealthy villages to the north. They reported these stories to Spanish officials.

Acting on these stories, the viceroy of Mexico (then called New Spain) sent Fray Marcos de Niza to find the cities of Cíbola. The viceroy was appointed by the king of Spain to rule in Mexico in the name of the king. Fray Marcos was accompanied on his journey by some Piman people and Estéban, a slave who had been part of Cabeza de Vaca's group.

Traveling along trading routes, Fray Marcos and Estéban got as far north as the Zuni villages in northwestern New Mexico. Fray Marcos viewed one of the villages (most likely Hawikuh) from a distant hill. He later described it as "larger than the city of Mexico." At the village of Hawikuh, Estéban did or said something that angered the Zuni people and they killed him. Fray Marcos and his group had to hurry back to Mexico.

Coronado decided to take a large expedition to find



Coronado's Route. The possible route of Francisco de Coronado's travels from Compostela, Mexico, through Arizona, all the way to Kansas.

the seven cities of Cíbola. "Filled with such accounts of marvels and wonders," more than 300 Spaniards and 800 Indians joined Coronado's expedition from Compostela. In addition to all the people, Coronado's took along a herd of 1,500 mules, cows, and sheep. These animals helped them transport their equipment and provided food along the way.

Coronado's exact route is not known. What surprises archaeologists today is that we have been unable to find any trace of Coronado's journey until he and his expedition reached northern New Mexico. Even what was found in northern New Mexico from Coronado's expedition is sketchy. Why do you think this is so? Only



The Battle of Hawikuh—July 6, 1540.

(Photo courtesy of the Museum of New Mexico Photo Archives. neg. no. 48918. Drawing by Kenneth Chapman.)

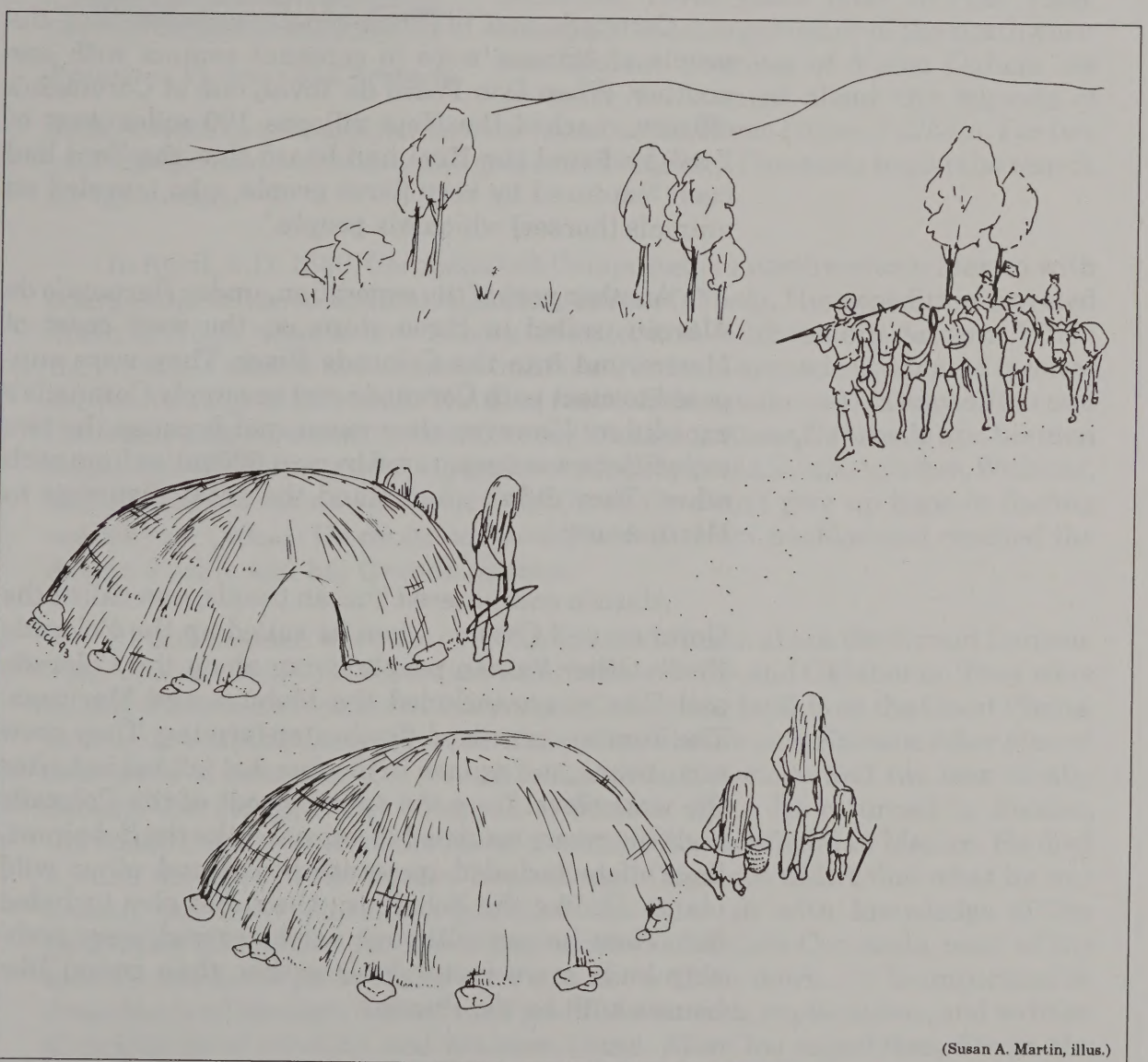
through written records and the oral histories of the Zuni and other Pueblo people do we know that Coronado's expedition was not a myth.

Because of the records, we do know that Coronado traveled through southern Arizona to Hawikuh. There he found no gold, but he did find people who had lived in the area for centuries. Moving east, his group stayed among the pueblos of the Rio Grande. Coronado sent exploring parties as far away as the Hopi villages, the Grand Canyon, and Kansas.

Coronado and his men met many different Arizona tribes on their journey, including the Tohono O'odham, the Pima, the Quechan and Cocopa (or Yuma), and the Hopi and Zuni. It is likely that the first people that Coronado and his men met were Pimans, the Sobaipuri. The Sobaipuri lived along the Santa Cruz and San Pedro rivers of southern Arizona. The Sobaipuri lived

in brush and earth-covered huts in villages that the Spanish called rancherías. Like the prehistoric Hohokam, they grew corn, beans, squash, and agave by irrigating with water from rivers and streams. They also added to their diet with gathered desert foods such as saguaro fruit and mesquite beans.

The Spanish recorded their opinions of the people they met. Coronado's followers were not impressed with the Sobaipuri. Casteñeda described the inhabitants of southern Arizona as "the most barbarous people



(Susan A. Martin, illus.)

Coronado in Arizona. As Coronado entered the Sobaipuri village, he saw brush- and earth-covered huts and life quite different from his own.

that have yet been seen." He noted that they lived by hunting and gathering acorns.

The Spaniards spoke more approvingly of the Pueblo people, who lived more like the Spanish. Pueblo people grew corn and lived in compact villages of stone. Speaking of Zuni, Castañeda wrote that "these people are very intelligent." How do you think the attitudes of the Spanish affected the way they treated the different groups they met? Do you think the Spanish were prejudiced against the Indians?

Coronado and his men soon discovered that the people of Arizona were in constant contact with one another. When Don Pedro de Tovar, one of Coronado's officers, reached the Hopi villages 100 miles west of Zuni, he found the Hopi had heard that the Zuni had been "captured by very fierce people, who traveled on animals [horses] which ate people."

Another part of the expedition, under Hernando de Alarcón, sailed in three ships up the west coast of Mexico and into the Colorado River. They were supposed to meet with Coronado and re-supply Coronado's expedition. However, they never met because the two expeditions were separated by over 500 miles from each other! They didn't understand the great distances in North America.

Alarcón encountered Yuman people, now called the Quechan and Cocopa, when he sailed up the Colorado River. Other Yuman people living along the Colorado and Gila rivers included the Mohave and Maricopa. The Yumans practiced floodwater farming. They grew corn, beans, and squash in the fine dirt left behind after the water level from the spring floods of the Colorado and Gila rivers returned to normal. Like the Sobaipuri, their diets included mesquite beans and other wild plants. Unlike the Sobaipuri, their diet also included fish. Their houses, although earth-covered, were probably built more rectangular rather than round like houses built by the Pimans.

When Alarcón arrived at the Yuman villages, he was met with suspicion and hostility. He learned it was because of rumors that the Zuni had been captured by



Francisco Vazquez de Coronado

A True Conquistador: CORONADO

Francisco Vasquez de Coronado was a Spanish explorer who spent two years exploring the American Southwest. When he came to Mexico in A.D. 1535, he worked for the first Spanish viceroy in Mexico, Antonio de Mendoza. Three years later, in A.D. 1538, Coronado became governor of the northwestern Mexican province of *Nueva Galicia*. As governor, he learned about the legends of great wealth in gold and jewels to be found at the *Seven Cities of Cíbola*. For two years he dreamed of finding the great cities. Finally, Coronado began the search for his dream.

In April, A.D. 1540, Coronado left Compostela in northwestern Mexico with a large expedition to find the legendary cities of *Cíbola*. His expedition traveled north through what is now Sonora, Mexico, and southeastern Arizona. When they reached what is now Arizona and New Mexico, Coronado attempted to enter the Zuni village of Hawikuh. The Zuni resisted Coronado and his expedition and Coronado took Hawikuh by force. During his explorations, Coronado and his men found many different groups of people—including Hopis, Zunis, Apaches, Wichitas, and Pawnees—but no gold or jewels. Coronado didn't give up hope in finding wealth and *Cíbola*. He continued to explore the Hopi pueblos and reached the Acoma Pueblo and Rio Grande pueblos.

He and his men were the first Europeans to learn about the Grand Canyon. They crossed the Pecos River into what is now Texas and Oklahoma. They were among the first Europeans to observe people hunting buffalo on the Great Plains. Coronado's expedition traveled as far east as what is now Kansas. After almost two years of searching for wealth and riches, Coronado and his men finally became discouraged and returned to Mexico. After he returned to Mexico, Coronado lived the last of his life as a minor colonial official in Mexico. He died around the age of 44 in Mexico. Even though Coronado didn't find what he was looking for, his explorations provided the Spanish with knowledge of the geography and native peoples of the Southwest. Before Coronado, most of the history and description of the area was not written down. He is important in American and Mexican history because of his contacts, explorations, and written descriptions of what he and his men found. After his expedition, life in the American Southwest was never the same. More Europeans and Mexicans followed Coronado's explorations. CONQUISTADOR (kon-KEES-tuh-door): one who conquers.

bearded men. Coronado had arrived at the Zuni pueblo of Hawikuh in early July A.D. 1540. Alarcón heard stories of his capture of the village in early September of that same year.

The Spanish explorers may not have found the other major Indian group in Arizona, the upland Yumans, including the Havasupai, Hualapai, and Yavapai. The Havasupai farmed along a creek in a side branch of the Grand Canyon, spending the winter months hunting and gathering on the Coconino Plateau to the south. The Hualapai hunted and collected plants to the south and west of the Havasupai. The Yavapai hunted and collected plants in a 20,000-square-mile area of mountain and desert south of the Hualapai. All three of these groups lived in dome-shaped shelters thatched with grass.

Two other groups that the Spanish may not have met in Arizona were the Apache and Navajo. Archaeologists find it difficult to identify Navajo and Apache sites. Because of this, they do not know when these people arrived in Arizona. The Apache and Navajo may have been in northern Arizona and northern New Mexico by the time Coronado arrived in A.D. 1540. It's also possible they were the people called the "Querechos" whom Coronado met on the Great Plains.

Coronado and his men returned to Mexico without finding the wealth they sought. Like Coronado, the Spanish people who later colonized Arizona first came in search of wealth and people to convert to the Catholic religion.

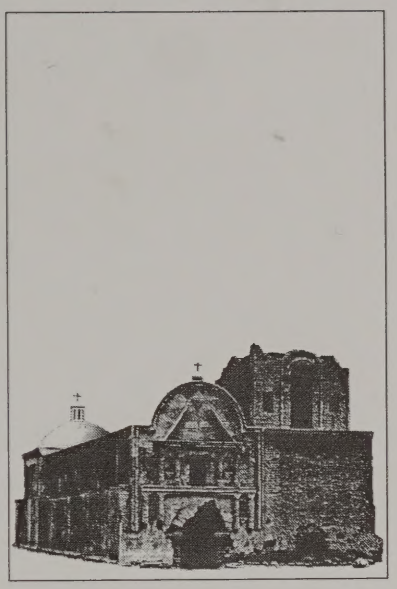
SPANISH CATHOLIC MISSIONS

The Spanish were disappointed in what Coronado and his men had to say about the lands in what is now Arizona. It was not until the 1600s that a serious effort was made to create missions or settlements here. Missions were created by Spanish priests for the purpose of making native Indians Catholic. The first of three missions was established among the Hopi in 1629. These missions were abandoned over fifty years later when

the Pueblo people revolted in 1680. The revolt temporarily drove all of the Spanish out of northern New Mexico and Arizona.

In southern Arizona, missions did not begin until a Catholic priest, Father Eusebio Francisco Kino, came from Mexico to visit the people south of the Gila River in A.D. 1691. Even then, the work of the missionaries was difficult because of their great distance from cities in Mexico. Catholic masses were said under brush shelters for many years before permanent adobe buildings and churches could be constructed.

The Indians did not necessarily appreciate the missionaries' efforts. The Hopi village of Awatovi is a good example. In A.D. 1700, Hopis from other villages burned Awatovi to the ground, killing most of the people who lived there because they were friendly with a visiting Catholic priest.



Spanish Mission

Then in A.D. 1751, the Pima and Tohono O'odham rebelled and many missions were **plundered**. As a result, a Spanish fort called a **presidio** was established at Tubac in that year, becoming the first Spanish settlement in Arizona.

SPANISH SETTLERS AND NATIVE PEOPLES

After the missionaries and solders established missions and presidios in the region, the settlers came. These farmers and ranchers hoped to benefit from Arizona's **fertile** soil. Spain tried to encourage Spanish settlement of the region by making large gifts of land to Spaniards who wanted to move to Arizona.

Of course, the native people considered the lands to be theirs. When the Spanish settled along the Colorado River in 1780 near the present-day town of Yuma, they took some of the best agricultural land. Their animals and livestock trampled and destroyed Yuman gardens. When Spanish food supplies ran short the following winter, the settlers competed with the Yumans for mesquite beans. There was less food for all. To protect

themselves, the Yumans destroyed the Spanish settlements.

To the east and north, the Apache and Navajo were primarily hunters and gatherers. Though they planted some gardens, both tribes traveled widely in search of food. They wanted horses and mules mostly for food. To get horses and mules, they began raiding Spanish settlements or rounding up escaped herds. They used the horses and mules for food as much—or more—than they did for transportation.

With their traveling lifestyle, the Apache and Navajo had many opportunities for contact with the new Spanish colonists and other native tribes. Mistreatment by the settlers and competition over land and food led to raids and counter-raids between Apache, Spaniards, and Pimans in the southern parts of Arizona. In the northern parts, the conflict was between Spanish, Zuni, Hopi, and Navajos.

The presidios only had a limited effect in stopping the Apache and Navajo raids and battles in the south. In northern Arizona, there were no presidios. By the late 1700s, Spanish settlements of southern Arizona were suffering heavily under the constant attacks and raids.

In A.D. 1786, Spanish colonial officials decided to try something new. Their new policy stated that war would be carried out against native tribes who showed hostility toward the Spanish. However, those who accepted Spanish authority were settled around the presidios and given food and other necessities. This policy was successful in bringing peace to Spanish Arizona.

In A.D. 1810, the Mexicans rebelled against Spain. The central government in Mexico City did not have enough money, supplies, or people to protect the northern frontier. Raids by the Apache began once again. They became so severe that, by A.D. 1848, Tucson was the only southern Arizona settlement still occupied by non-Indian people. By this time, American trappers were exploring the Gila valley, setting the stage for another era in Arizona's history.

We don't know how the native peoples of Arizona first felt about the coming of the Spanish. The native peoples lacked written languages. The Spanish did not consider the opinions of the native people important enough to write down.

Archaeology can help us to understand the lives of native peoples and changes in their lives caused by the arrival of the Spanish. This will help keep Arizona's **heritage** and its history alive. However, archaeologists need help from all of Arizona's citizens to preserve the past. Without an effort from everyone, an important part of Arizona's heritage will disappear.



WORD LIST

☐ **expedition** (ek-spih-DISH-un) A journey made for a reason or purpose; the people making such a journey (as for exploring). The *Spanish made an **expedition** to Arizona to find riches in the area.*

☐ **fertile** (FUR-tl) Fruitful; productive; rich; seeded. Able to easily and plentifully produce crops and plants, eggs, seeds, fruit, pollen, or young. An animal is fertile when it is able to give birth to young. *There is a very **fertile** soil in this valley.*

☐ **heritage** (HAIR-ih-tij) Something that is handed down from earlier generations to the next or from the past; tradition, inheritance; and something that comes to one from one's ancestors. American heritage. *The **heritage** of freedom is precious to Americans.*

☐ **plunder** (PLUN-der) To steal, rob from, or to take by force. Also means something stolen such as booty; loot; fortune; reward; treasure; spoils. *The Conquistadors **plundered** Native American villages.*

☐ **presidio** (prih-SEE-dee-oh) A military post or fort, prison, or jail (from Spanish *presos, pena*). *After the Conquistadors explored the land north of Mexico, **presidios** were set up to protect the missions and Spanish settlements.*

8 WAGON WHEELS AND TRAIN TRACKS: HISTORICAL ARCHAEOLOGY IN ARIZONA

Lee Fratt

Do archaeologists in Arizona only study the past of ancient Indians? Many people think so, but they are wrong. There is a group of archaeologists who study the more recent past. They are called historical archaeologists.

HISTORICAL ARCHAEOLOGY is different from PREHISTORIC ARCHAEOLOGY in two major ways. First, prehistoric archaeologists study the human past *before* writing was developed or brought into an area. Historical archaeologists study the human past *after* there were written records. In Arizona, this means that historical archaeologists study people who lived after A.D. 1539 when Fray Marcos de Niza wrote about his journey through the region.

Second, historical archaeologists study the past of people of European, African, and Asian descent who came to the "New World" after A.D. 1492. They study the descendants of prehistoric people. These modern descendents include: the Hopi, Zuni, Paiute, Pima, Tohono O'odham, Quechan, Cocopah, Yavapai, Hualapai, Maricopa, Mohave, Navajo, Apache, and the Yaqui (or Yoeme). The Yaqui came to Arizona from Mexico in large numbers during the late nineteenth and early twentieth centuries.

Why do you think archaeologists want to study the recent past when there are all kinds of written records available to tell us what happened and what life was like? Isn't that the job of historians who write history books?

Written records do tell us many things about the past—like when an event occurred, why it happened,

HISTORICAL ARCHAEOLOGY AND PREHISTORIC ARCHAEOLOGY

Prehistoric archaeologists study the human past *before* writing was developed or brought into an area. Historical archaeologists study the human past *after* there were written records.

HISTORY AND PREHISTORY

The time before history was written down is called **prehistory.** We have found no written records for prehistoric times. The people did share their past through art and oral stories told by older people to the younger people. Though they didn't leave written records, they left other things behind that tell us about their lives. These artifacts are the clues that tell us of times and people living here thousands of years before Christopher Columbus and others came to this land that we now call America.
Since the time of Columbus,

more people came to America from the continents of Europe, Asia, and Africa. They wrote about the people and the land they found. This gave us a written history to add to things that people leave behind. We call the time since the time of Columbus and the first written records of this land and its people, **history.** However, very rarely is history written by those who actually experienced it. Many prefer to call these two different periods of time, **precontact** and **postcontact.** Precontact is the history of people living in the American continents before contact with people from other continents and postcontact is the history after contact with these people.

ARTIFACTS AND FEATURES

Spear points, pottery, tin cans, toys, tools, and other things made by people and left behind become clues for archaeologists about their lifestyles and culture. These man-made things are called **artifacts** (AR-tih-fakts). **Features** (FEE-churz) like trash dumps, outhouses, and the remains of buildings or structures also provide evidence about lifeways. Archaeologists also look at modes of transportation and the environment. Clues might include a site's water supply, and what people thought about it. However, sometimes when people write about their lives, their writings are lost. Also, there are many things that people don't usually write down. Some of these things people might not write down include: what they ate, what kinds of things they made or bought, and how their lives changed over the years. As an example, if you wrote about a trip to the zoo in your journal, would you also write about what you ate for breakfast that day?

The things that do get recorded have *your* point of view. Often the records don't tell the whole story. Would you write about what you thought of a trip to the zoo—or what your little brother or best friend thought about it? Maybe each of you felt much differently about the trip, but your journal would only have your point of view.

Unlike historians, historical archaeologists look for clues to the past from things that people used and then left behind. These clues are ARTIFACTS (like tin cans, toys, tools) and FEATURES (like trash dumps or outhouses). The reason that historical archaeology is so exciting is that you can combine information from written records, artifacts, and features to get a more complete and detailed picture of the past.

Let's see what information archaeological research can give us about Arizona's more recent past that would not be found in a history book. We'll use railroad transportation as an example.

ARCHAEOLOGY AND TRANSPORTATION

Archaeology can tell us how building railroads changed the kinds of objects people used every day in their homes. Before the railroads came to Arizona, people and objects were moved by wagons or pack mules. At ranches, farms, and towns dating from the A.D. 1850s to the 1870s, archaeologists found that most of the broken pieces of pottery were from sturdy, plain, white dishes. The manufacturer's trademark on the bottom of these dishes showed they were made in England. When things were moved by mule train or freight wagon, there

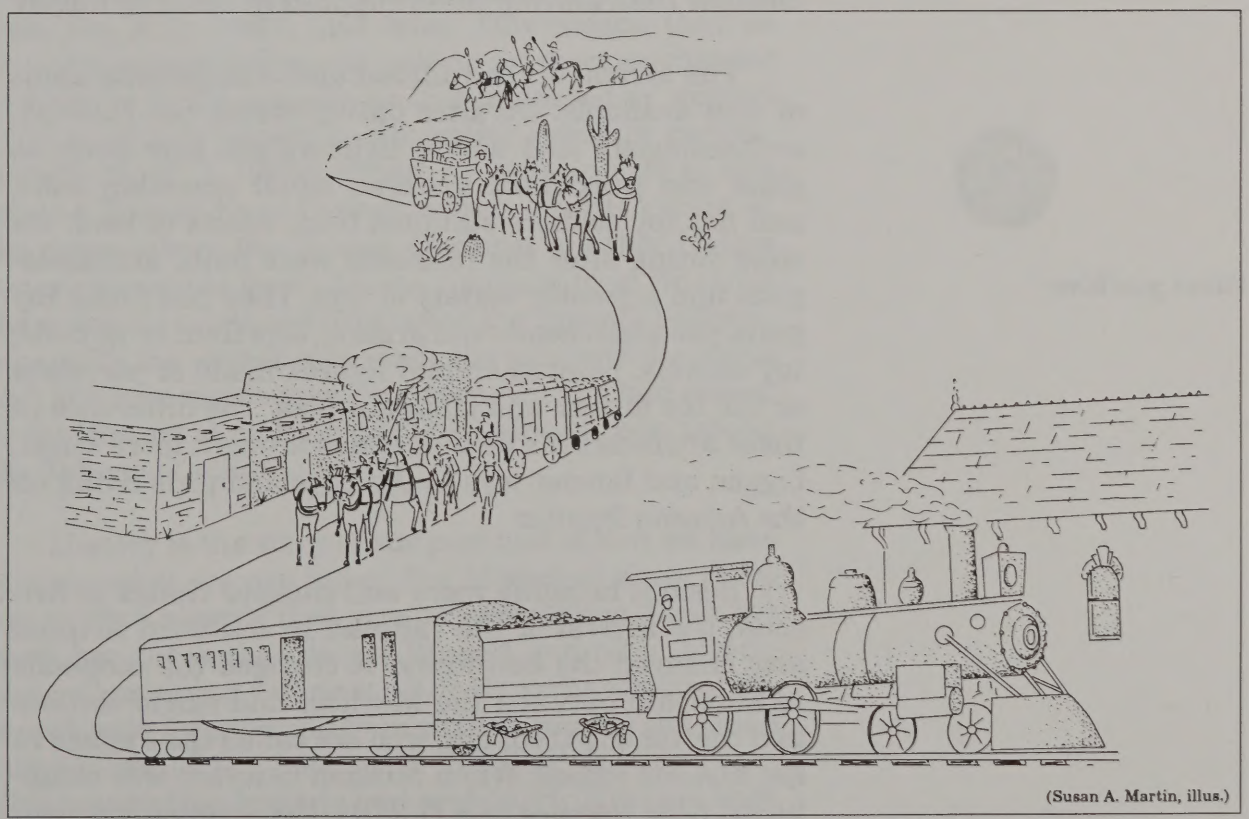
was little variety in the kinds of dishes that people could buy. Although these plain dishes were not very colorful, they were sturdy and could be moved without breaking.

In the A.D. 1880s and 1890s, railroads were built in many parts of Arizona. With the change in transportation, the way of life for the people in the Arizona Territory changed.

What kind of changes do you think the arrival of the railroad brought to Arizona? Though this may seem like a simple question, first think how you would answer "What was life like before there were cars, trucks, and jets?"

Shipping goods by train changed things by lowering prices because trains could bring a lot more things than mules and wagons. More delicate items could also be shipped on the train without breaking them. The variety of things available to the people in Arizona and other places on America's frontier increased.

food supply, types of plants and animals. They help archaeologists decide if the people were farmers or hunter-gatherers.

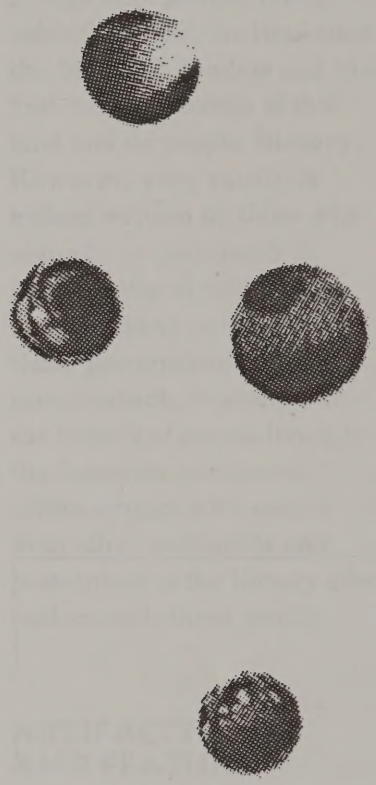


(Susan A. Martin, illus.)

The Trail. The trail changed from a horse path to a train track between the time of Francisco de Coronado's visit and Arizona's statehood.

On historic sites after the railroad arrived, there are fewer broken pieces or **sherds** from the sturdy plain white dishes from England. The number of sherds from thinner, fragile, and decorated dishes increases. The trademarks on the bottom of these thinner dishes show they were made in American factories. This evidence suggests that by the A.D. 1880s and 1890s, a person shopping for a new set of dishes had more choice in style and price than before the railroad came.

House styles also changed when the railroads were built through Phoenix and Tucson. The remains of houses dating before the railroad arrived show that the people in central and southern Arizona built mostly Mexican-style houses of **adobe** with flat roofs, plain interiors, and few or no windows. After the railroad came, archaeological evidence shows that people started to build more brick houses with shingled roofs, decorative wood trim, and glass windows. This change in house styles was possible because shipping supplies such as machine-cut lumber and window glass was much cheaper than moving these supplies by mule or wagon.



Glass marbles

The arrival of the railroad also changed the kinds of toys available. On sites dating before the railroad, archaeologists find small, light-weight toys such as glass and **porcelain** marbles, small porcelain dolls, and flat toy soldiers stamped from sheets of lead. On sites dating after the railroads were built, archaeologists find a greater variety of toys. They find jacks, toy guns, porcelain heads and arms or legs from large dolls, toy shovels, painted animal figures made of porcelain or tin, toy dishes, and glass marbles. The difference in these artifacts tells us that trains brought more kinds, bigger, and fancier toys to the boys and girls living on the Arizona frontier.

Besides bringing more and cheaper things to Arizona, the arrival of the railroad in southern Arizona also changed the **economy**. It changed the economic relationship between the Mexican and Anglo settlers and the Tohono O'odham, who are called the Papago in the historic record. When Mission Guevavi was established near Nogales in A.D. 1701, the Spanish missionaries started a tradition of using pottery jars and bowls made by the Tohono O'odham. Archaeologists call this

Papago pottery, after the historic name for the Tohono O'odham.

Historic records have little information about Anglo and Mexican use of Papago pottery. Archaeologists, however, find pieces of this kind of pottery on almost all southern and central Arizona historic sites that date from the A.D. 1700s to the 1920s. Many of the pottery sherds are from large jars that were used to store water and from bowls that were used to cook and serve food.

On some sites, especially those dating before the 1880s, the number of Papago pottery sherds is equal to or more than the number of sherds from English, American, and Mexican pottery. This means that selling and trading Papago pottery to Mexican and Anglo settlers was a pretty big business for many people in southern Arizona throughout the nineteenth century.

After trains came to Tucson, however, the business in Papago pottery began to drop off. Archaeologists find fewer and fewer of these kinds of sherds on sites dating from the A.D. 1890s and later. This means that as American-made dishes and cooking pots became cheaper and easier to buy, people no longer needed or wanted Papago pottery except as decorative items or curiosities. By the A.D. 1920s, almost no historic sites in and around Tucson have Papago pottery sherds except in the areas where the Tohono O'odham or other Native American people lived. We can conclude from this that the economic relationship between the Tohono O'odham, especially the women who made the pots, and the Anglo and Mexican residents of southern Arizona had ended. Today, the art of making pottery is almost gone among the Tohono O'odham.

History is the story of our past and of how we have become what we are today. For historical sites, there are written records that give us information about the past, but these records are **biased** and often incomplete. Combining information from archaeological research with information from written records can make our picture of the past more detailed and complete. This means that historic and prehistoric sites are both important—because the past, like archaeology, belongs to us all.



WORD LIST

☐ **adobe** (uh-DOH-bee) Bricks made out of clay and soil. Historically, bricks had straw or other straw-like materials added. The adobe bricks are dried in the sun and used to make homes and buildings. *Many homes in the Southwest and Mexico are made out of **adobe**.*

☐ **bias** (BY-us) Opposing or favoring without real cause, to unfairly influence. *Some papers are written with a **bias** in that they only cover one point-of-view.*

☐ **economy** (ee-KON-uh-mee) A system for producing, distributing, and using money, goods, natural resources, and services. *The **economy** of prehistoric Arizonans was different than today's economy.*

☐ **porcelain** (POR-suh-lin) A hard, white ceramic ware used especially for dishes or toys. *With the coming of the railroad to Arizona, toys made of **porcelain** began to be used.*

☐ **sherds** (sherdz) Broken pieces or fragments of pottery. *Pottery **sherds** provide important clues to the past for historical archaeologists.*

A LOOK AT CAREERS:

ABOUT THE AUTHORS

The archaeologists who wrote and illustrated the essays for this book became interested in archaeology in different ways and have a variety of jobs in the field of archaeology.

Stephanie Whittlesey, who wrote *The People of Arizona,* has a Ph.D. in anthropology from the University of Arizona in Tucson. She became interested in anthropology—the study of people—when she went on the *World Campus Afloat* program sponsored by Chapman College. She got "hooked on archaeology" after taking a course in southwestern archaeology at the University of Arizona. Stephanie works for Statistical Research, a private archaeology company in Tucson. She is a project leader, explores projects for her company, writes budget and research proposals, and is responsible for making sure that excavation and survey projects are done properly. She also studies ceramics (pottery) and writes reports based on the work of the people she supervises.

Larry Agenbroad is a professor of geology at Northern Arizona University in Flagstaff. He wrote *Packrats, Mammoths, and Paleo-Indians: Clues to the Ice Ages.* Larry has two master's degrees—one in geology and one in anthropology. He also holds a Ph.D. in geology from the University of Arizona in Tucson. As you may have guessed from reading his essay, he is very interested in mammoths. One of the sites he is studying is the Mammoth Site in Hot Springs, South Dakota, where around 100 mammoths were trapped in a sinkhole. For many years, Larry has been trying to figure out how and why mammoths became extinct.

Kathleen Henderson wrote the essay *Why Did Hunter-Gatherers Become Farmers?* She has a master's degree and a Ph.D. in anthropology from Arizona State University in Tempe. She is a principal investigator for Northland Research, a private archaeology company in Tempe. Kathy has found and studied many sites in Arizona, including Archaic camp sites, Hohokam canals and villages, and Historic sites. Her speciality is the study of Hohokam sites.

Lisa Young, the author of *How Settled Was Village Life?* is writing her Ph.D. paper for the University of Arizona. She went on her first archaeological dig (at Kampsville, Illinois) when she was fifteen years old, and thinks that archaeology is a great way to combine her interest in Indians and old fashioned ways of doing things with her love of being out of doors. Lisa's paper is about how the ancestors of the Hopi managed water and soil to grow crops in the Homolovi State Park area near Winslow, Arizona.

Joseph A. Ezzo, who wrote *Shopping in Nature's Supermarket: The Diet and Nutrition of Ancient Arizonans,* has a Ph.D. in anthropology from the University of

Wisconsin in Madison. He is a project director for Statistical Research, a private archaeology company in Tucson. In his job, he is responsible for supervising excavations and surveys. He also analyzes material and writes reports once the excavations and surveys are finished. Joe became interested in archaeology during high school, when he went on a trip to Mexico and toured the sites of prehistoric cities and towns. He specializes in paleonutrition, the study of ancient diet.

J. Jefferson Reid, who has a Ph.D. in anthropology from the University of Arizona, wrote *Why Are There Indian Ruins in Arizona?* He is a professor of anthropology at the University of Arizona. From 1979 until 1992 he directed the Grasshopper Field School for the university. Jeff is interested in the method and theory of archaeology (in other words, how archaeologists go about deciding how to interpret what they find in the ground), as well as prehistoric farming villages in the Southwest, the Mogollon culture in Arizona's mountains, and the history of southwestern archaeology (how archaeologists did things in the past).

Jim McDonald is an archaeologist with the Coronado National Forest. He wrote *When Coronado Hit the Trail: Who Was There and Who Was Visiting?* Jim became interested in archaeology when he was in high school and he volunteered to help excavate an English colonial village in Maine. He has a master's degree in Archaeological Resource Management from the University of Arizona and he has worked in Canyon de Chelly National Monument in Arizona and in the Klamath, Targhee, and Mt. Baker-Snoqualmie National Forests in the Pacific Northwest.

Lee Fratt wrote *Wagon Wheels and Train Tracks: Historical Archaeology in Arizona*. She has a master's degree in anthropology from the University of Arizona and is working on her Ph.D. dissertation. Her dissertation research is on prehistoric grinding tools—manos, metates, and similar things. She is also an expert in historical archaeology. Lee became interested in archaeology by studying dinosaurs. When she was about seven years old she started collecting plastic dinosaurs from cereal boxes, and then began to study how dinosaurs lived. Later, her father got her interested in history. Lee decided to study archaeology (the human past) instead of paleontology (the past of plants and other animals) when she went to college.

Susan Martin drew the illustrations in the book. She has a bachelor's degree in anthropology from the University of Arizona, and is working on a master's degree in American Indian studies. She became interested in archaeology by walking through farmers' fields in Pennsylvania, where she discovered many old arrowheads and spear points. Susan is specially trained as a scientific illustrator. She works at Statistical Research, where she organizes the graphics—the illustrations, pictures, and maps—that go into archaeological reports. In addition to illustration, she would like to work on museum exhibits.

STUDENT GLOSSARY



ADOBE (uh-DOH-bee) Bricks made out of a sandy kind of clay and historically straw. The adobe bricks are dried in the sun and used to make homes and buildings.

ARCHAIC (ar-KAY-ick) Ancient, old, or surviving from an earlier people. Archaic can also mean relating to an earlier time. The people who lived in the Southwest after the Paleo-Indians are called the Archaic or Desert Archaic people. They were in the Southwest from about 6,000 B.C. until about 2,000 years ago, after the time of the big game hunters. The Archaic people got most of their food from hunting animals and gathering wild plants. The Archaic people learned about corn from people in Mexico.

ARROYO (uh-ROY-oh) Spanish word from *riachuelo* meaning stream, brook, small river or the dry bed of a waterway in the Southwestern part of the United States.

ARTIFACT (AR-tih-fakt) Any object made or used by people or showing human workmanship can be called an artifact (*arte* = by skill; *factus* = to do).



BIAS (BY-us) Opposing or favoring without real cause, unfairly influence.



CALCIUM (KAL-see-uhm) A chemical element or soft, white metal. You need calcium to grow strong and healthy bones. Calcium is used in the tissue of plants and animals and is the fifth most common element in the Earth's crust.

CARNIVORE (KAR-nih-vor) A meat-eating animal. An animal that eats only meat.

CARNIVOROUS (kar-NIV-uhr-rus) Feeding mostly on meat from animals.

CATASTROPHE (kuh-TAS-truh-fee) A sudden, terribly bad event that happens.

CLIFF DWELLING (KLIF dwell-ing) Apartment-like houses that were built in many places in the Southwestern United States. They were built into stone cliffs or in wide caves in the cliffs. This made them easy to defend against invaders because people could only reach them by ladders or climbing up the cliffs from below.

CONQUISTADOR (kon-KEES-tuh-door): A Spanish word meaning *one who conquers.* The Spanish who explored and plundered the New World were called *conquistadores.*

CULTIVATE (KULL-tuh-vayt) To raise crops; to water, loosen the soil, and weed around growing plants.

CULTIVATION (kull-tuh-VAY-shun) The process of preparing the land and caring for growing crops.



DENDROCHRONOLOGY (den-dro-kruh-NALL-uh-jee) The science of dating events and weather patterns in former times by studying growth rings in trees. You can determine the age of a tree by counting its rings. Dendrochronology is the study of tree-ring dating. (*dendro* = tree; *chrono* = to measure; *ology* = study of; *chronology* = an arrangement of events in the order that they occured.)

DESERT INTAGLIOS (DEZ-ert in-TALL-yohs) Very large figures or patterns on the ground are called *intaglios.* They are made by removing the desert pavement in a pattern that exposes the lighter rock and dirt beneath. Some intaglios were as large as parking lots or football fields. *See also* **Intaglios.**

DESERT PAVEMENT (DEZ-ert PAVE-ment) A black desert surface covering made of tightly packed pebbles and other rock fragments. The wind has removed all smaller particles. The strong winds in the desert carry dust and sand that sometimes polish the surface of desert pavement, making it shiny and smooth. Intaglios are made by removing the desert pavement to reach the lighter sand underneath.

DIET (DIE-et) What people and living organisms eat is their diet. Eating only certain foods and drinks to lose or gain weight or when sick is a special diet. A diet is a combination of foods and liquids that provide the necessary nutrients for the body.

DOMESTICATION (doh-mess-tih-KAY-shun) The process of taming or making usable for humans. To tame and make usable for a human environment and human beings.

DROUGHT (drowt) A long period of time when it doesn't rain. When the land needs rain and doesn't get it, all living things are affected.

DUNG (duhng) Animal Manure. Solid waste material passed from the bowels of animals. Scientists study dung to learn what animals lived and ate in the past.

E

ECONOMY (ee-KON-uh-mee) A system for producing, distributing, and using money, goods, natural resources, and services.

ENVIRONMENT (en-VY-ruhn-muhnt) All of the surroundings that influence the growth, development, and well-being of a living thing.

EPOCH (EP-uhk) A period of time when important things happened or an age in the history of the Earth is an epoch.

EROSION (ih-ROH-zhun) An eating away. Being worn away little by little.

ETHNOBOTANIST (eth-no-BOT-'n-ist) A person who receives special training to identify different kinds and parts of plants.

EXCAVATION (ecks-kah-VAY-shun) Carefully removing layers of dirt or sediment to find objects made by people from long ago.

EXPEDITION (ek-spih-DISH-un) A journey made for a reason or purpose; the people making such a journey (as for exploring).

EXTINCT (eks-TINKT) No longer existing or active, gone out.

EXTINCTION (eks-TINK-shun) Bring to an end, wiping out, or destruction.

EXTRATERRESTRIAL (EKS-tra-tuh-RES-tree-uhl) Coming from outside of the earth.

F

FEATURES (FEE-churz) Things made by people and left behind like trash dumps, outhouses, and the remains of buildings or structures. These provide clues for archaeologists about their lifestyles and culture.

FERTILE (FUR-tl) Fruitful; productive; rich; seeded. Able to easily and plentifully produce crops and plants, eggs, seeds, fruit, pollen, or young. An animal is fertile when it is able to give birth to young.

FIRST AMERICAN (first uh-MEHR-ih-kuhn) The people living in North and South America before the time of Columbus. Many groups of people today are First Americans and have ancestors who lived in this country for thousands of years. Also called Native American, American Indian, Native People.

FLINT KNAPPING (FLINT nap-ping) A method used to make spearpoints, arrowheads, and knives from stone. A stone or antler is struck against another stone, making smaller pieces of stone fall from it. The flint knapper continues to take off chips or flakes of stone until the object is complete.

G

GLACIAL (GLAY-shull) Made out of ice, icy, having much ice, or having many glaciers.

GLACIALS (GLAY-shullz) The times when ice advanced.

GLACIER (GLAY-sher) A large mass of ice formed from the snow on the ground that moves very slowly down a mountain or a long valley.

H

HERBIVORE (HER-buh-vor) A plant-eating animal. An animal that eats only plants.

HERBIVOROUS (her-BIV-uhr-us) Feeding chiefly on plants.

HERITAGE (HAIR-ih-tij) Something that is handed down from earlier generations to the next, from the past; tradition, inheritance; and something that comes to one from one's ancestors. The right to free speech is part of the American heritage.

HISTORY (HISS-tuh-ree) The time after written records or after the European first came and wrote about the people and events in America. History follows the time we call "prehistory." History can also be a tale, story, or a written description of events. These written descriptions usually explain why the events happened.

HOLOCENE (HOH-luh-seen) The period from the end of the last great Ice Age through today. From about 10,000 years ago until the present.

HUNTER-GATHERERS (HUN-ter GATH-er-erz) People who depend on wild animals and plants for food to survive.

I

INTAGLIOS (in-TALL-yoh) Intaglios are patterns made by removing the dark

surface covering of rocks (called desert pavement) in a pattern that exposes the lighter rock and dirt beneath. The patterns were made in different large shapes like a human figure or a spiral.

INTERGLACIALS (IN-tuhr-GLAY-shullz) Warm periods between glacial periods. Interglacials caused the ice sheets to melt and become smaller or disappear.

IRON (EYE-ern) A chemical element and the most common metal. Iron is part of the coloring material of red blood cells that carry oxygen to the tissues from the lungs. It is the fourth most common element in the Earth's crust.

IRRIGATE (EAR-rih-gate) To supply water for the land through streams, channels, pipes, ditches, or by sprinkling.

IRRIGATION (ear-rih-GAY-shun) The act of supplying land with water.



MAIZE (mayz) Corn—First developed as a natural food crop by native people in Mexico. Adopted by native people in the Southwest. The only cereal native to the New World. Its heads are eaten ripe or unripe as a vetgetable. The grains and foliage are used for animal feed. Flour, starch, syrup, alcohol, and paper can be made out of maize. Native people in Arizona learned to grow maize.

MANO/METATE (mah-no, meh-TAH-tay) In the Southwest, mano comes from the Spanish word for "hand" and is a small grinding stone held in the hand. The mano is used to grind corn and grain on a larger stone, the metate, to make flour.

MEGAFAUNA (MEG-uh-FAW-nuh) Large animals of the Pleistoscene.

MIDDEN (MID-'n) A mound of trash. Archaeologists study middens to find artifacts from people who lived at the site long ago.

MIGRATORY (MY-gruh-tor-ree) Moving or wandering from place to place with the seasons. *See* SEASONAL ROUND.

MINERAL (MIN-er-uhl) A chemical element necessary in a healthy diet. Minerals are naturally-occurring substances that are not plants, animals, or other living things. Minerals make up the rocks of the Earth.

N

NATIVE AMERICAN (NAY-tiv uh-MEHR-ih-kuhn) The first people living in North and South America before the time of Columbus. Many groups of people today are Native Americans. They have ancestors who lived in this country for thousands of years before Columbus came. Also called American Indian, First American, and Native People—**NATIVE PEOPLE** (NAY-tiv PEE-pull).

NEW WORLD (new world) The continents of North America and South America and the western hemisphere. A term first used by Europeans.

NUTRITION (new-TRIH-shun) Food and nourishment. How food is used by living things for growth and energy is nutrition.

O

OBSIDIAN (ob-SID-ee-uhn) A hard, dark, glassy volcanic rock that is formed when lava cools.

OLD WORLD (old world) The continents of Europe, Asia, and Africa. The Eastern hemisphere. A term first used by Europeans.

P

PALEO-INDIAN (PAY-lee-oh IN-dee-uhn) Early people (*paleo* = ancient, long ago).

PALEONTOLOGY (pay-lee-on-TOL-uh-jee) The science that deals with life on earth in earlier times or studying fossils.

PALEONTOLOGIST (pay-lee-on-TOL-uh-jist) A person who studies or works in paleontology.

PALYNOLOGISTS (payl-uh-NOL-uh-jists) A person who studies the fine yellow powder flowers create called pollen.

PIT HOUSE (pit hows) A home built partly underground by ancient peoples. The pit house had a main living area and sometimes also had a smaller area.

PLEISTOCENE (PLY-stoh-seen) The Ice Age(s) and period in the world's history from about one million years ago until about 10,000 years ago. During the Pleistocene, much of the earth was covered with ice.

PLUNDER (PLUN-der) To steal, rob from, or to take by force. The Conquistadors plundered Native American villages. Also means something stolen such as booty; loot; fortune; reward; treasure; spoils.

POLLEN (PAHL-uhn) A fine, yellowish powder released from flowers. Grains of pollen are carried by the wind, insects, or hummingbirds to the pistils of flowers to fertilize them. Windblown pollen is smooth and light. When insects or hummingbirds carry pollen, it is often heavy and sticky. Fossilized pollen can be used to investigate the plants of prehistoric times.

PORCELAIN (POR-suh-lin) A hard, white ceramic ware used especially for dishes or toys.

POSTCONTACT (post-KON-takt) After the first recorded contact or meeting of Europeans and native people in America. This term also is being used by many scientists and historians to mean the period of time after the Europeans first came to the Americas.

POTTERY (POT-uh-ree) Earthenware or clayware pots, dishes, or vases. These cups, bowls, and other dishes or objects were made from clay and hardened by heat.

PRECONTACT (pre-KON-takt) Before the first recorded contact or meeting of Europeans and native people in America. Some scientists and historians are using the term "precontact" for "prehistory."

PREHISTORY (pre-HISS-tuh-ree) The time before there were written records or before the Europeans came and wrote about the people and events in America is called prehistory. Prehistory can also mean the study of prehistoric people or existing in times before written history.

PREJUDICE (PREHJ-uh-dihs) An unfair opinion; forming an opinion without taking the time and care to fairly judge; causing damage or harm to something or someone by the action of another.

PRESIDIO (prih-SEE-dee-oh) A military post or fort, prison, or jail (from Spanish *cárcel, presos, pena*).

PROTEIN (PRO-teen) An important part of all living cells. Protein is a nutrient containing nitrogen that is necessary for life and must be a part of the human diet in order for people to survive. Foods such as meat, milk, cheese, eggs, and beans contain protein.

PUEBLO (PWEB-low) A Spanish word meaning "town," "city," or "village;" an Indian village of apartment-type buildings.

R

RADIOCARBON OR CARBON-14 DATING (RAY-dee-oh-KAR-buhn DATE-ing) All living things take in carbon. Some carbon contains small amounts of energy, or radiation. These small amounts of radioactive carbon we call Carbon-14 (C-14). At death, the amount of radioactive carbon begins to decay at a constant rate. Radiocarbon or C-14 dating involves measuring the tiny amount of radiation released from once-living material. These measurements can tell us how old the once-living material is, up to 100,000 years ago. The older the material, the less radiation there is left to release. Bone, wood, cloth, shell, and other materials can all be C-14 dated. Archaeologists use radiocarbon dating to find out how old plant and animal remains are.

S

SEASONAL ROUND (SEE-zuh-nuhl round) After the crops were harvested and stored, then the village was temporarily abandoned by everyone who could walk and carry containers. People from the village traveled together in small groups to hunt for animals and gather the many wild plants available in the fall. As winter approached, they would return to their village because wild foods were difficult to find. During winter and into the spring, the villagers kept warm in their pit houses and ate the food they had stored during the summer and fall. Corn and beans were planted in the spring. A month or two after planting, some of the villagers may have left for a brief hunting and gathering trip. They returned in time to help with the harvest and start the yearly cycle again.

SEDENTARY (SED-'n-tair-ee) Settled or permanently attached. Doing or requiring much sitting. (*sedere* = to sit).

SHERDS (sherdz) Broken pieces or fragments of pottery. Pottery sherds provide important clues to the past for historical archaeologists.

SITE (sight) A location, place. "Site" is a word used by archaeologists for places where prehistoric and historic people used to live in or stay at. Sites are places where humans did things and left their things behind.

STRATIGRAPHY (struh-TIG-ruh-fee) The science of studying layers of materials, as in rock layers in the Earth or deposits in archaeological sites. Cultural remains and dirt become buried over time. Usually, the layer on the bottom is the oldest, the layer on the top is the youngest. The dirt of different layers is often colored differently. (*strata* = layers; *graph* = written)



TEOSINTE (tay-oh-SEEN-tay) A tall, wild grass of Mexico and Central America that is considered to be an early form of maize or corn. (*teotl* = god + *cintl* = dried ears of maize) Native people in Arizona cultivated teosinte until it improved and became corn.

TRADE (trayd) Buying, selling, exchanging or bartering goods. Archaeologists know that trading went on among ancient people because they found items people used from other far away places.



VEGETATION (vej-ih-TAY-shun) Plant life or growing plants.

INDEX

Acoma Pueblo **6**-6, **7**-7
acorns **1**-6, **3**-2, **7**-6
adobe **1**-22, **5**-9, **7**-9, **8**-4, **8**-6
African-Americans **1**-20
agave **4**-2, **4**-3, **7**-5
 roasted hearts **4**-2
Alarcón, Hernando de **7**-6, **7**-8
Alaska **1**-1, **2**-5
amaranth greens **4**-2
Anasazi **1**-11, **1**-13, **1**-14, **1**-16, **1**-17, **1**-21, **5**-5, **5**-7, **5**-9, **6**-4
 kivas **1**-16
 pots **1**-16
Anglo-Americans **1**-20
animals
 Siberian and Asian **2**-5
Apache **1**-11, **1**-19, **5**-8, **6**-6, **7**-7, **7**-8, **7**-10, **8**-1
 western **5**-8
Archaic **1**-5, **1**-6, **1**-7, **1**-8, **1**-10, **1**-11, **1**-12, **3**-1, **3**-5
 people **1**-6, **3**-1, **3**-4, **3**-5, **3**-7.
 See also Desert Archaic people
 period **3**-1
 sites **3**-1, **3**-2, **3**-5
Arizona **1**-11, **1**-12, **1**-13, **1**-16, **1**-20, **2**-6, **5**-5, **5**-6, **5**-8, **7**-5, **7**-8
 central **8**-5
 historic **5**-8
 mountains **1**-13
 northern **2**-6, **7**-10
 southeastern **2**-9
 southern **5**-8, **7**-4, **7**-5, **7**-9, **7**-10, **8**-5
 Spanish **7**-10
Arizona Territory **1**-20
Arizonans
 ancient **4**-1, **6**-8
 diet and nutrician **4**-1, **4**-6, **4**-7
 tooth disease **4**-5
 prehistoric **4**-7, **8**-6.
 See also Arizonans: ancient
arrow heads **1**-13
arroyo **6**-4, **6**-8
artifact **1**-10, **1**-13, **2**-6, **2**-9, **2**-10, **5**-8, **8**-1, **8**-2, **8**-4
Asian **1**-1, **1**-20.
 See also Chinese; Japanese

Awatovi **7**-9

B

ballcourts **1**-11
baskets **1**-7, **1**-10
beans **1**-8, **3**-7, **3**-8, **4**-3, **4**-5, **4**-8, **5**-2, **5**-3, **5**-6, **6**-4, **7**-5, **7**-6
bear meat
 dried **5**-5
bears **2**-10
Bering Land Bridge **1**-1, **1**-2, **2**-5
Bering Strait **2**-5
berries **1**-6, **2**-4, **4**-2
bias **8**-5, **8**-6
bison **1**-2, **1**-4, **2**-9
 fossils **2**-8
 Pleistocene **2**-2
bones **1**-1
brush shelters **1**-4
 used as church **7**-9
burials **1**-13, **1**-16
butchering **2**-9

C

C-14.
 See carbon-14
cactus fruit **1**-6, **1**-7, **1**-11, **1**-21, **3**-2.
 calcium **4**-5, **4**-7
California
 Gulf of **1**-13
camels **1**-2, **2**-5
 fossils **2**-8
 Pleistocecne **2**-2
canals **1**-16
carbon-14 **2**-7
carbon-14 dating **2**-7
carnivore **2**-8, **2**-10, **4**-1, **4**-3
carnivorous **2**-10
Castañeda, Pedro de **7**-1, **7**-5
catastrophe **6**-2, **6**-8
Catholic religion **1**-20, **7**-8
 See also Spanish: churches; Spanish: missionaries; Spanish: missions; Spanish

Catholic
caves **1**-7, **1**-14, **1**-21, **2**-7, **2**-8
ceramic **8**-6
ceramic pots **1**-10, **6**-3
Chinese **1**-1, **1**-20
cliff dwelling **1**-14, **1**-21, **6**-1
climate **2**-2, **2**-5, **2**-7, **2**-8, **2**-9, **3**-4, **4**-6, **5**-6
change **2**-2, **2**-8, **4**-2
Clovis **1**-11
hunters **1**-2, **1**-4, **1**-6
people **1**-1, **1**-2
points **1**-1, **1**-2
Cocopa **7**-4, **7**-6
Colorado
southwestern **1**-14
Colorado River **1**-17, **7**-6, **7**-9
Columbus, Christopher **1**-1, **1**-18, **1**-22, **8**-1, **8**-2
Compostela, Mexico **7**-1
conquistador **7**-7, **7**-11
copper bells **1**-13
corn **1**-6, **1**-8, **1**-13, **1**-17, **1**-19, **1**-22, **3**-2, **3**-7, **3**-8, **3**-9, **4**-2, **4**-3, **4**-5, **5**-2, **5**-3, **5**-6, **6**-4, **7**-5, **7**-6
Coronado, Francisco Vasquez de **1**-18, **7**-1, **7**-2, **7**-3, **7**-6, **7**-8
followers **7**-4, **7**-5, **7**-6
Journey **7**-2, **7**-3, **7**-4
cotton **1**-8
cultivate **3**-7, **3**-8, **3**-9
cultivation **3**-8

D

deer **1**-4, **1**-7, **1**-13, **3**-1, **4**-1, **4**-2
See also food: deer meat
Dendrochronology **6**-2
Desert Archaic people **1**-6
desert intaglio **1**-17, **1**-21
desert pavement **1**-17, **1**-21
diet **1**-6, **3**-8, **4**-1, **4**-4, **4**-5, **4**-6, **4**-7, **4**-8, **5**-6
dire wolves
Pleistocecne **2**-2
ditches **1**-16
dogs **1**-16, **2**-10, **4**-5
domestication **3**-2

drought **1**-17, **1**-18, **1**-21, **3**-8, **4**-5, **5**-6, **6**-4
dung **2**-7, **2**-8, **2**-10

E

economy **8**-4, **8**-6
eggplant **4**-5
eggs **1**-16, **4**-5, **4**-8, **7**-11
 See also turkey eggs
environment **2**-5, **5**-5, **5**-9, **6**-2, **6**-4, **6**-8, **8**-2
epoch **2**-1, **2**-10
erosion **6**-4, **6**-8
Estéban **7**-2
Eusebio, Father Francisco Kino **7**-9
excavate **2**-9, **6**-6
excavation **2**-9, **6**-2
expedition **7**-1, **7**-2, **7**-3, **7**-4, **7**-6, **7**-7, **7**-11
extinct **2**-2, **2**-4, **2**-8, **2**-9, **2**-10, **4**-2
extinction **2**-2, **2**-9, **2**-10
extraterrestrial **6**-1, **6**-2, **6**-8

F

farmers **1**-13, **1**-16, **5**-6
farming **1**-17, **1**-19, **5**-6, **5**-8
fertile **7**-9, **7**-11
First American **1**-1, **1**-18, **1**-22
fish **4**-4, **7**-6
flint knapping **1**-7, **1**-21
flour **1**-6, **1**-22, **3**-1, **3**-9
food **1**-2, **1**-4, **1**-6, **1**-16, **5**-6, **7**-10
 deer meat **4**-2
 gathered **1**-11, **1**-17
 horses **1**-19, **7**-10
 in burials **1**-13
 mules **7**-10
 plants **1**-4, **1**-6, **1**-7, **1**-17, **2**-9
 sharing **1**-8
 stealing **1**-18
 supply **1**-10
foods
 animal **2**-9
fruit **3**-1, **3**-5, **3**-6, **4**-1, **4**-2, **4**-4, **7**-11
 See also cactus fruit; saguaro fruit

G

"Gadsen Purchase" **1**-20
game animals **1**-2, **1**-4
gatherers **1**-6
gathering **3**-8
Gila River **1**-17, **7**-6, **7**-9
Gila valley **7**-10
glacial **2**-1, **2**-10
glacier **1**-1, **2**-2, **2**-5, **2**-10
grain **1**-22, **3**-8, **3**-9, **4**-4
Grand Canyon **1**-14, **1**-17, **5**-8, **7**-4
grass shelter **7**-8

H

Havasupai **5**-8, **7**-8
Hawikuh **7**-4, **7**-8
herbivore **2**-8, **2**-9, **2**-10
herbivorous **2**-10
heritage **7**-11
Hisatsinom **1**-14
history **1**-7, **1**-18, **1**-19, **1**-20, **2**-1, **2**-10, **2**-11, **7**-7, **7**-10, **7**-11, **8**-1, **8**-2, **8**-5
Hohokam **1**-11, **1**-12, **1**-14, **5**-6, **5**-7, **5**-8, **7**-5
Holocene **2**-1, **2**-2, **2**-10
Hopi **1**-11, **1**-12, **1**-14, **1**-16, **1**-19, **1**-20, **6**-4, **6**-5, **7**-4, **7**-6, **7**-7, **7**-8, **7**-9, **7**-10, **8**-1
Hopi pueblos **7**-7
Hopi villages **1**-18, **7**-4, **7**-6, **7**-9
horse **1**-19
horses **1**-18, **2**-5, **2**-10, **5**-5, **7**-6, **7**-10
 See also food: horses
 Pleistocene **2**-2
houses **1**-7, **1**-12, **1**-13, **1**-14, **4**-6, **5**-1, **5**-2, **5**-5, **5**-6, **6**-2, **6**-3, **6**-8, **7**-6, **8**-4.
 See also pit house
Hualapi **7**-8
humans
 Siberian and Asian **2**-5
hunter-gatherer **1**-6, **1**-17, **3**-1, **3**-5, **3**-8, **3**-9, **7**-6, **7**-10, **8**-3
hunters **1**-1, **1**-2, **1**-4, **1**-6, **1**-13, **2**-9
 See also Clovis hunters
hunting **1**-2, **1**-6, **1**-13, **1**-19, **2**-5, **2**-9, **3**-8, **4**-4

I

Ice Age **1**-2
Indian
See Indians, Native American
Indians **1**-1, **1**-22, **3**-7, **5**-9, **6**-1, **7**-1, **7**-2, **7**-3, **7**-6, **7**-8, **7**-9, **8**-1
See also American Indian; Native American; native people
intaglio
See desert intaglio
interglacial **2**-1, **2**-2
iron **4**-5, **4**-7
irrigate **1**-10, **1**-11, **1**-16, **1**-21
irrigation **1**-10, **1**-21, **5**-6, **5**-7, **6**-1, **6**-2

J

Japanese **1**-1
jewelry **1**-8, **1**-13, **1**-20, **5**-5, **5**-8
shell **5**-5, **5**-8

K

Kansas **7**-4
kivas **1**-12, **1**-16, **1**-20, **5**-7
See also Anasazi: kivas; Mogollon: kivas

L

land bridge **1**-1, **1**-2.
See also Bering Land Bridge
lifeway **1**-4, **1**-12, **1**-18, **1**-20
adapt to crops **1**-8
change **1**-4, **1**-6, **1**-10, **1**-18
lions **2**-10
See also mountain lions

M

Macaws **1**-13
maize **3**-2, **3**-9
See also corn

mammoths **1**-2, **1**-4, **2**-9
 fossils **2**-8
mano **1**-6, **1**-7, **1**-22, **3**-1
meat **1**-16, **1**-19, **4**-4, **4**-5, **4**-8
 See also bear meat; deer meat
meat-eating
 See carnivore
megafauna **2**-2, **2**-4, **2**-10
mesquite **1**-6, **3**-2
mesquite beans **1**-11, **3**-4, **3**-6, **7**-5, **7**-6, **7**-9
mesquite pods **1**-6
metate **1**-6, **1**-7, **1**-22, **3**-1, **5**-5
Mexican War **1**-20
Mexicans **1**-20
 rebellion **7**-10
Mexico **1**-13, **1**-14
midden **2**-7, **2**-8, **2**-10
migratory **5**-3, **5**-8
mineral **4**-5, **4**-7
missionaries **7**-9, **8**-4
Missions
 Spanish Catholic **7**-8
missions **7**-8, **7**-9, **7**-11
 See also churches; Spanish Catholic
 Guevavi **8**-4
Mogollon
 burials **1**-13
 hunters **1**-13
 kivas **1**-12
 Mountains **1**-12
 people **1**-12, **1**-13, **1**-14, **1**-16, **5**-5, **5**-7
Mormon
 farmers and ranchers **1**-20
mountain lion **2**-6
mules **5**-5, **7**-3, **7**-10, **8**-2

N

Native Americans **1**-1, **1**-2, **1**-11, **1**-22, **5**-8, **6**-1, **6**-2, **6**-5, **7**-11, **8**-5
 See also native people; Pimas
native people **1**-1, **1**-11, **1**-18, **1**-19, **1**-20, **1**-22, **3**-9, **7**-7, **7**-9, **7**-10, **7**-11
Navajo **1**-11, **1**-14, **1**-19, **1**-20, **6**-6, **7**-8, **7**-10, **8**-1
New Mexico **1**-12, **7**-9
 northern **1**-14

New World **1**-1, **1**-19, **1**-22, **3**-9, **8**-1
Niza, Fray Marcos de **7**-2
non-Indian people **7**-10
non-native people **1**-19
North America **1**-1, **1**-2, **1**-22
Nuñez, Alvar Cabeza de Vaca **7**-2
nutrition **4**-1, **4**-4, **4**-5, **4**-6, **4**-7
nuts **1**-6, **3**-1, **3**-6, **4**-2
See also piñon nuts

O

obsidian **3**-5, **3**-9, **5**-5, **5**-9
Old World **1**-19, **1**-22
Oraibi Pueblo **6**-5
oxen
fossils **2**-8

P

Paleo-Indian **1**-1, **1**-2, **1**-5, **1**-6, **1**-11, **2**-1, **2**-4, **2**-9, **4**-1, **4**-2
Paleo-Indian people **1**-1
paleontologist **2**-8, **2**-11
paleontology **2**-8, **2**-11
palo verde seed pods **4**-2
Papago **8**-5
Papago pottery **8**-5
Patayan **1**-11, **1**-17
people
prehistoric **5**-8
Pima **1**-11, **1**-19, **1**-21, **7**-2, **7**-4, **7**-6, **7**-9, **7**-10, **8**-1
Pimas **1**-11
piñon nuts **1**-6, **1**-7
pit house **1**-12, **1**-14, **1**-22, **5**-1, **5**-2, **5**-3, **5**-5, **5**-6, **5**-9
plants **1**-6
Siberian and Asian **2**-5
platform mounds **1**-11
Pleistocene **2**-1, **2**-2, **2**-5, **2**-6, **2**-8, **2**-9, **2**-11, **3**-4
plunder **6**-6, **7**-9, **7**-11
pollen **2**-7, **4**-6, **4**-8, **7**-11
porcelain **8**-4, **8**-6
postcontact **1**-18, **1**-19, **8**-2
pots **1**-10, **1**-13, **1**-16, **1**-22, **4**-6, **6**-3, **8**-5
See also ceramic pots; pottery

potsherds
See sherds
pottery **1**-10, **1**-11, **1**-13, **1**-16, **1**-17, **1**-22, **5**-9, **8**-2, **8**-4, **8**-5, **8**-6
Papago **8**-5
pottery sherds
See sherds
precontact **1**-18, **1**-19, **8**-2
prehistory **1**-18, **1**-19, **2**-8, **6**-4, **6**-5, **8**-1
prejudice **6**-1, **6**-8, **7**-6
presidio **7**-9, **7**-10, **7**-11
prospectors **1**-20
protein **4**-5, **4**-8
pueblo **1**-11, **1**-14, **1**-18, **1**-19, **1**-22, **5**-5, **5**-6, **5**-9, **6**-5, **6**-6, **7**-2, **7**-4, **7**-7, **7**-8
Pueblo people **1**-14, **1**-19, **7**-4, **7**-6, **7**-9

Q

Quechan **1**-11, **1**-17, **7**-4, **7**-6, **8**-1
"Querechos" **7**-8

R

rabbit **1**-4, **2**-10, **3**-1, **4**-2
radiocarbon **2**-7
See also carbon-14; carbon-14 dating; radiocarbon dating
radiocarbon dating **2**-7
raiding **7**-10
by Apache **1**-19, **7**-10
rain dance **1**-20
rainfall **1**-4, **1**-8, **1**-10, **1**-16, **1**-17, **1**-21, **3**-5, **5**-6, **6**-3, **6**-4
ranchería **7**-5
religion **1**-11
Anasazi **1**-16
Mogollon **1**-12, **1**-13
Rio Grande pueblos **7**-7
rock overhangs **1**-7, **2**-7, **2**-8
rock shelters **1**-14

S

saber-toothed cats **1**-2
Pleistocene **2**-2

saguaro
cactus **2**-7
fruit **5**-5, **7**-5
San Pedro River **2**-9, **7**-4
Santa Cruz River **7**-4
sedentary **5**-3, **5**-4, **5**-5, **5**-6, **5**-7, **5**-8
seeds **1**-6, **1**-8, **1**-10, **3**-1, **3**-2, **3**-5, **3**-6, **3**-7, **3**-8, **3**-9, **4**-2, **5**-2, **7**-11
settlers **1**-20, **7**-10, **8**-5
See also Spanish: settlers
Seven Cities of Cíbola **7**-2, **7**-3
shelter **1**-4
shelters **1**-7, **2**-7, **2**-8, **7**-5, **7**-6, **7**-8
See also cliff dwelling; houses; pit house; rock overhangs
sherds **8**-4, **8**-5, **8**-6
short-faced bears
Pleistocecne **2**-2
shrub oxen
Pleistocecne **2**-2
Siberia **1**-1
site **1**-4, **2**-6, **2**-9, **2**-10, **3**-1, **3**-2, **3**-5, **4**-6, **5**-8, **6**-3, **7**-8, **8**-2, **8**-4, **8**-5
sites **1**-4, **1**-12
skin tents **1**-4
Sobaipuri **7**-4, **7**-5, **7**-6
solders **7**-9
soldiers **1**-20
South America **1**-2, **1**-22
Spain **7**-10
Spaniards **7**-10
See also Coronado, Francisco Vasquez de: followers; Spanish: explorers
Spanish **1**-6, **1**-14, **1**-18, **1**-19, **1**-20, **7**-5, **7**-6, **7**-8, **7**-10
churches **1**-19
colonists **7**-10
explorers **1**-14, **7**-3
missionaries **8**-4
missions **7**-9
officials **7**-10
people **7**-11
ranches **1**-19
settlements **7**-10
settlers **1**-19, **7**-8, **7**-9
spear points **2**-9, **8**-2
spears
stone-tipped **1**-2
squash **1**-8, **3**-7, **3**-8, **3**-9, **4**-3, **4**-5, **5**-2, **6**-4, **7**-5, **7**-6
squirrel **1**-8, **3**-8, **4**-2
stone knife **1**-6, **1**-7, **3**-5

stone-tipped spears **2**-9
stratigraphy **2**-6

T

Tansy mustard seeds **4**-2
tapirs **1**-2
teeth **1**-1
teosinte **3**-2, **3**-7, **3**-9
tigers **2**-10
tobacco **1**-8
Tohono O'odham **5**-8, **7**-4, **7**-9, **8**-4, **8**-5
tools **1**-6, **1**-7, **1**-12, **1**-13, **2**-8, **2**-9, **3**-1, **3**-5, **3**-9, **5**-5, **5**-8, **8**-2
Tovar, Don Pedro de **7**-6
trade **1**-13, **3**-5, **3**-9, **5**-5, **5**-7, **5**-9, **7**-2
trade goods **1**-13, **5**-5, **5**-8, **5**-9
Transportation **8**-2
transportation **7**-10, **8**-2, **8**-3
Tubac **7**-9
turkey eggs **1**-16
turkeys **1**-16, **4**-5
turquoise **1**-13

V

vegetation **2**-5, **2**-6, **2**-7, **2**-8, **2**-9, **2**-11
villages **1**-14, **1**-17, **5**-5, **5**-8, **6**-1, **6**-2, **6**-4, **6**-5, **6**-6, **6**-8, **7**-2, **7**-4, **7**-5, **7**-6
 prehistoric **5**-8

W

wagons **8**-2, **8**-3
walnuts **1**-6
war **1**-19, **6**-5
 See also raiding
 against Apaches **1**-20, **7**-10
 against native tribes **7**-10
 against Navajo **7**-10
White Mountains **5**-8

Y

Yavapai **7**-8
yucca **1**-7
 boiled blossoms **4**-2
 fiber **1**-7
Yuma
 town **7**-9
 tribe.
 See Cocopa
Yuman **7**-9

Z

Zuni **1**-11, **1**-18, **1**-19, **7**-2, **7**-4, **7**-6, **7**-7, **7**-8, **7**-10
Zuni Pueblo **1**-18
Zuni villages **7**-2, **7**-7

APPENDIX

1 TEACHER LESSON PLANS

2 REFERENCES

3 RESOURCES FOR TEACHERS

4 EVALUATION FORM

1 LESSON PLAN
ARIZONA LIFEWAYS

Subjects	math, social studies
Skills	application, knowledge, comprehension
Strategies	measurement, reading, map skills
Duration	two or three sessions approximately 45 minutes to 1 hour each
Class size	any—whole group and small group

OBJECTIVES

Through studying about the various peoples who have lived in Arizona, students will be able to show the relationship in time and location of these peoples and explain how and why their lifeways were similar or different. Students will be able to explain which lifeway appeals most to them. Students will consider why archaeologists might focus on pottery when studying southwestern cultures.

MATERIALS

String (200 meters), small tags to mark string, "Comparing Cultures" (Worksheet 1-1), strips of paper 1.2 meters (m) × 10 centimeters (cm) — one per student.

WORD LIST

Page 1-17 lists unfamiliar words. The following words are important for study. Use active approaches such as relating the words to the student's preexisting word knowledge, providing repetition of words and engaging students in meaningful use of the words.

- flintknapping
- mano
- metate
- Native American
- pit house
- pottery
- pueblo

SETTING THE STAGE

1. Several days before the lesson, ask students to collect pictures of what life was like 100 years ago. Ask them to be prepared to share these and comment on how life is similar or different today.
2. Review Lesson 1, "Why is the Past Important?" from ***Intrigue of the Past: A Teacher's Activity Guide for Fourth through Seventh Grades.***
3. Conduct a discussion on differences and similarities between life 100 years ago and today. List them on the board.

PROCEDURE

Day 1

1. Tell the students that they will help demonstrate how old they are in relation to the age of the earth, and how long people have lived in Arizona.
2. Start with a 200 meter string that you have already measured, marked, and wound up again. Mark it at critical dates, allowing each cm to equal 100 years. Mark the age of the students (10 years, or 1 millimeter), age of teacher (i.e.. 40 = 4 mm), 1776 = 2.2 cm, people in new world (12,000 years ago = 1.2 m), modern humans (Beginning of Pleistocene = 200 m). The best place to do this is outside in a place as long as two football fields.
3. Explain to students that if we extended the string far enough, we could show when the dinosaurs lived (6.3–24 km or 3.9–15 miles) and the beginning of earth (450 km or 281 miles). Think of towns that are about this far away from where the school is to describe how far this is.
4. Walk back along string to end where the first decimeter represents their life and discuss how little history they have experienced. Have students share their pictures and discuss how life has changed in the past 100 years.

Day 2

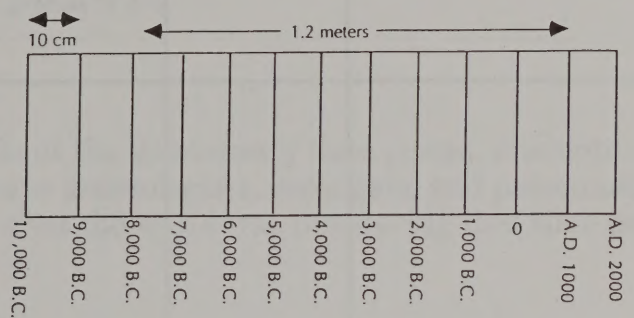
1. Using an active approach, review the Word List words identified as important.
2. Review Lesson 2, "Culture Everywhere" from *Intrigue of the Past: A Teacher's Activity Guide for Fourth through Seventh Grades.* Identify basic needs. Use "Comparing Cultures" (Worksheet 1-1) to explore how prehistoric peoples met their basic needs.
3. Divide class into four groups. Assign each group a section to read in Chapter 1. The sections are "Big Game Hunters," "Hunters and Gatherers," "Village Farmers," and Historical Times, starting with "This was a troubled time . . ." ("Village Farmers is rather large, so you might want to subdivide it.)
4. When they have finished their reading have each group use Worksheet 1-1 to fill in the characteristics of their group of people. Certain areas will be incomplete because archaeologists don't have evidence for everything for each culture, especially the earlier ones. The students can use subsequent chapters to add to the worksheet in later lessons.
5. Have each group explain to the rest of the class what they learned.
6. Discussion question: Stephanie Whittlesley, the author who is also an archaeologist, often mentioned the pottery made by each group. Why would archaeologists be so interested in prehistoric pottery?
 [The pottery for each group is very distinctive. This allows scientists to use pottery to identify the culture of the people who made it. Even within cultures the pottery of various time periods is so distinctive that archaeologists can use it to determine the approximate dates of occupation of a site.]
7. Homework: Many different prehistoric peoples were described in the reading. If you could go back in time, which group or lifestyle would you choose? Why?
8. Following the activity, compile the students' charts onto one chart and make copies for everyone. Return it to the students to use as a reference when studying the remaining chapters, especially Chapter 4.

Day 3 (or for homework)

Provide students with a map of Arizona and ask them to show, using different colors or markings, where the various people lived that were found in Arizona in the past.

EXTENSIONS

- Have students make their own timelines. Give each student a 1.2 meter length of paper about 10 cm wide. Demonstrate to them how to use a meter stick to draw a straight line across the top and divide it into 10 cm intervals (each signifying 1,000 years.) Have them draw in important dates as they learn about them throughout the book.



- Show the class a video on flint knapping or ask a flint knapper to come to class to show the technique. This will help students understand an important prehistoric technology.
- Have the students make coil pottery and/or have a potter demonstrate it. Students will gain an understanding of the technology.

EVALUATION

Participation in group cultural activity and chart of cultural characteristics produced by each group. Individual maps can be used as well. If timelines are made, these can be used for evaluation throughout the lessons.

LINKS

All chapters in the book.
Intrigue of the Past: A Teacher's Activity Guide for Fourth through Seventh Grades

Lesson 1 "Why is the Past Important?"
Lesson 2 "Culture Everywhere"
Lesson 5 "Chronology: The Time of My Life"
Lesson 10 "Stratigraphy and Cross-Dating"

WORKSHEET 1-1

Name _____

COMPARING CULTURES

	Male–Female Roles or Religion	Tools	Shelter	Food or Water
Big Game Hunters				
Hunter–gatherers				
Hohokam				
Anasazi				
Patayan				

2 LESSON PLAN
THE QUATERNARY PERIOD

Subjects	science, language arts, social studies
Skills	knowledge, analysis
Strategies	scientific inquiry, classification, observation, discussion, writing
Duration	approximately 30 to 45 minutes for each day Individual lessons can be used alone if desired
Class size	any; work individually, in groups of 2, or in groups of 4-5

OBJECTIVES

Through studying about the Quaternary time period, students will be able to describe the various ways archeologists, geologists, and paleontologists gather evidence to determine what the world was like during that time period.

MATERIALS

Day 1 Reference sheet 2-2.

Day 2 Reference sheet 2-2.
Refer to *Intrigue of the Past: A Teacher's Activity Guide for Fourth through Seventh Grades,* Lesson 13: "Pollen Analysis."

Day 3 Extensions, dung casts, tracking identification books—one for each group, owl pellets—one for each student, covered plastic containers.

WORD LIST

Pages 2-10 and 2-11 list unfamilar words. The following words are important for study. Use active approaches such as relating the words to the student's preexisting word knowledge, providing repetition of words and engaging students in meaningful use of the words.

- dung
- extinct
- extinction
- midden
- paleontology
- pleistocene
- vegetation

SETTING THE STAGE

Day 1 *Depending on the level of the students and time involved, the teacher may choose to do the extensions.*

1. Have students read section called "Geological Clues" on page 2-6. Discuss.

2. ***Teacher's Activity Guide for Fourth through Seventh Grades,*** Lesson 10: "Stratigraphy and Cross-dating." See extension lessons for further ideas for teaching stratigraphy.

Day 2

1. Have students read the section entitled "Vegetational and Climatic Clues" on pages 2-6 to 2-7. Discuss.

2. Go through ***Intrigue of the Past: A Teacher's Activity Guide for Fourth through Seventh Grades***, Lesson 13: "Pollen Analysis."

Day 3

Have students read section entitled "Vegetational and Animal Clues." Discuss. If there is time do the extension on animal dung and owl pellets.

CLOSURE

Have students read the remaining sections in Chapter 2. Discuss the questions in the last paragraph. Ask students to give examples in their current lives, such as: What if there were no grocery stores? How have our lives changed over the last 100 years? 10 years?

EVALUATION

Have students write a letter to a friend or relative explaining what they learned this week about how archaeologists learn about the past. Stress that they are to tell not only what they did, but what they learned from each activity. They should include at least three techniques they learned.

EXTENSIONS

1. Explore why an animal became extinct recently or is on the endangered species list. Come up with a solution to protect the species.

2. Make packrat middens by having students place objects in a pile of shredded wheat and then stirring in diluted white glue. Allow these to harden for a day or two and then trade and dissect. The students write an analysis of what they find in the "midden" and what it means life was like when this midden was made. They should list objects, classify them, and infer a local climate.

3. Demonstrate time periods in stratigraphy to students by layering different colors

of sand in baby food jars. Have students work in pairs. Use 5 or 6 colors of sand. Have students use Worksheet 2-1 to record what time you place the different colors in the jar. Discuss the idea that the bottom layers are deposited earlier.

4. Discuss what happens when the jars are turned on their sides or upside down. Does it change the premise that the bottom layers are always the oldest? How might a geologist know that the layers have been turned?

5. Another similar demonstration is to use various kinds of breads and fillings to make a multi-layered sandwich to represent rock layers. Manipulate the bread to show folds, faults, domes, etc. which can change normal layering patterns.

6. Divide class into groups of four or five. Using dung casts obtained from a scientific supply house, students practice dung identification by comparing the dung casts to identifying characteristics in tracking books.

7. Have students dissect owl pellets individually and guess what was eaten by the owl. Have students save bones, teeth, etc. in a covered container. Students wishing to pursue identification of the food remains may do so individually.

LINKS

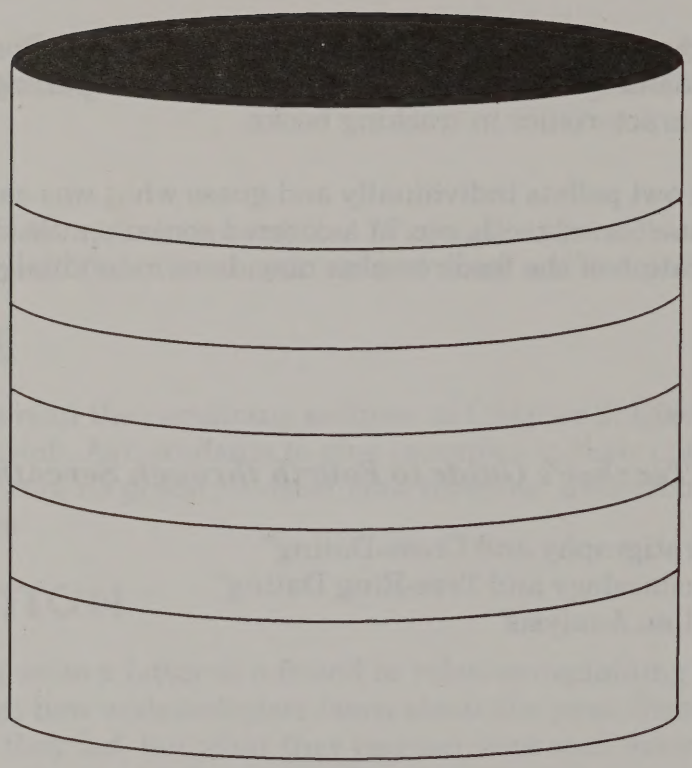
Intrigue of the Past: A Teacher's Guide to Fourth through Seventh Grades.

Lesson 10 "Stratigraphy and Cross-Dating"
Lesson 12 "Archaeology and Tree-Ring Dating"
Lesson 13 "Pollen Analysis"

WORKSHEET 2-1

Name_____

THE SANDS OF TIME



APPLY YOUR KNOWLEDGE

You visit a canyon. You see that there are several different layers of rock in the canyon wall. Which layer would be oldest?

Which layer would be youngest? Why?

REFERENCE SHEET 2-2
GEOLOGIC TIME

Era	Periods	Epochs	Years Ago	Notes	Comments
Cenozoic—The age of mammals	Quarternary	Holocene	(millions) .01	Ice ages—Ice sheets covered North America 4 times.	That's us!
		Pleistocene	2 million		Brr!
	Tertiary	Pliocene	5	Mammals become the most dominant life form	Pretty hairy!
		Miocene	24		
		Oligocene	38		
		Eocene	55		
		Paleocene	63		
Mesozoic—The age of dinosaurs	Cretaceous		138	Dinosaurs are the most dominant life form	***Dino–might!***
	Jurassic		205		
	Triassic		240		
Paleozoic—The age of fishes	Permian		290	Fish are the dominant life form	Sounds pretty fishy
	Pennsylvanian		330		
	Mississippian		365		
	Devonian		410		
	Silurian		435		
	Ordovician		500		
	Cambrian				
The Great Unconformity			570	Long erosian	Even the experts don't know what happened!
Pre-Cambrian	Younger		1,700	Life appears on earth	***Now that's <u>old</u>!***
	Older				



LESSON PLAN

THE ARCHAIC HUNTER-GATHERERS

Subjects	social studies, performing arts, science
Skills	application, analysis, synthesis
Strategies	reading, role-playing, debate, scientific inquiry
Duration	2 sessions—the first 30 minutes, the second 45 minutes
Class size	any—entire class and small group

OBJECTIVES

Through studying about the Archaic hunter-gatherers and the later farmers, students will be able to hypothesize the reason for the change in lifeway.

MATERIALS

Popped popcorn, unpopped corn, teosinte or other wild grass
Situation cards (3-1)

WORD LIST

Page 3-8 lists unfamiliar words. The following words are important for study. Use active approaches such as relating the words to the student's preexisting word knowledge, providing repetition of words and engaging students in meaningful use of the words.

- cultivate
- cultivation
- hunter-gatherer

SETTING THE STAGE

Day 1

Bring popcorn for the students to snack on. If possible, collect some teosinte or a similar wild grass and compare it to present-day corn. Ask which plant looks like it would provide more food. Read aloud the section on the "Origins of Corn" in Chapter 3 and discuss.

PROCEDURE

Following the corn discussion, have students read the rest of Chapter 3 silently to themselves. Follow-up with a discussion. Set the stage for tomorrow by telling the students that they will be acting as a band of hunter-gatherers.

Day 2

Divide students into groups of 4-5, assigning the following roles to each group:
1. The older generation who didn't want to begin farming. Instead, they want to trade for corn.
2. The group that has secretly cultivated the corn plants.
3. The women who prepare the food in camp.
4. The men who have traditionally been good hunters.
5. A mixed age group of people willing to try farming.

Have the students prepare to play these roles. Remind students of the ramifications of each situation. For instance, a low yield from a hunting expedition might increase the group's willingness to try farming. Be sure to have the students consider their assigned person's feelings when acting out the role play, and what they would probably argue for and against. Allow them time to plan as groups.

Give the students the situation cards (3-1) in order as they proceed through the activity.

CLOSURE

Discuss as a group the appropriate portrayals of actions and feelings and assist them in seeing where they were not so appropriate. Discuss other reasons for the change in lifeway. This will review of the issues presented in the chapter.

EVALUATION

Observation of the role play for accurate portrayal of the issues and feelings which might have occurred as the Archaic people changed their lifeway to one of farming.

EXTENSIONS

• Provide some Indian or blue corn. Have students select which kernels would provide the best seeds for growing. (According to the text, these would be the larger ones.) Have students pick some of the smaller ones for comparison. Have the students grow the corn and keep track of which plants do best and what factors affect them.

• Students invent a game that could have been played using only the materials available to the Early Arizonans of this time period. Have them share this with the class.

LINKS

Discovering Arizona—Chapters 4 and 5

Intrigue of the Past: A Teacher's Activity Guide for Fourth through Seventh Grades, Lesson 2: "Culture Everywhere"

Lesson 13: "Pollen Analysis"

Worksheet 2-2

SITUATION CARDS

1. A few young people from your group show the new plant that they have tried growing over the last few seasons. They got it from people in the south who told them to plant some of the seeds instead of eating all of them.	5. The hunters go out for a week and only bring back 3 rabbits and 2 turkeys.
2. The hunters go out for a week and get 3 deer, 6 turkeys, and 15 rabbits.	6. Several older people volunteer to stay with the crop of corn, if it is planted, through the gathering season.
3. You went to your traditional place to gather mesquite beans and another group had already been there. There were very few beans left.	7. Birds eat all of the planted corn crop just before harvest.
4. A drought hits the area that you live in. You can only gather half the food you usually do.	8. You meet another group who has been cultivating corn. They have a great amount of corn stored up.

Cut the above into "Situation Cards" for use with this lesson.



LESSON PLAN

THE PALEO-INDIAN AND ARCHAIC DIET

Subjects	health, science, social studies
Skills	comprehension, application, analysis, evaluation
Strategies	writing, categorizing, research, recording
Duration	two sessions at least two days apart of approximately 45 minutes to 1 hour
Class size	any—whole group for part and small groups for one activity

OBJECTIVES

Through studying about the different lifeways of Paleo-Indians and Archaic people living in Arizona, students will be able to explain how their diets changed through time and the nutritional consequences of these diets.

MATERIALS

Day 1 Photographs or examples of squash, corn, beans, meat, and a variety of foods that we eat today. Worksheet 1-1, "Comparing Cultures," from Chapter 1 that students had previously worked on, "Food Guide Pyramid" (Worksheet 4-1), red, green and blue pencils or pens, "Foods I Eat" (Worksheet 4-2).
Extension: Books and articles about wild foods that can be eaten.

WORD LIST

Page 4-7 lists unfamiliar words. The following words are important for study. Use active approaches such as relating the words to the student's preexisting word knowledge, providing repetition of words and engaging students in meaningful use of the words.

- diet
- pollen

SETTING THE STAGE

Day 1

1. Collect pictures or real samples of food that the ancient people ate, such as corn, beans, squash, cornmeal, meat. Do the same with an assortment of food students eat today.
2. Ask the students which foods they would rather eat day after day.

3. Discuss how the Archaic people had to eat the same things over and over. Either in discussion or as homework ask the students to imagine the work that was involved in obtaining and preparing the food. Then ask them what they know about modern food processing. Point out things like the human labor that is still involved in picking and sorting fruits and vegetables. Do we eat things over and over.

PROCEDURE

1. Have students read Chapter 4. Review aloud what they have learned and ask if there are questions about the reading.
2. Pass out the "Comparing Cultures" worksheets that the students started in Chapter 1 showing how the lifeways of early Arizonans compared with each other. Have students add any new knowledge they have gained about these people concerning foods.
3. Pass out Worksheet 4-1, "Food Guide Pyramid." Have the students add the foods that each group ate. Have them use different colored pens or pencils for each group. *Sample key:*
 - **Blue** (Paleo-Indian)—mammoths, bison, berries, nuts, roots, leaves, small animals.
 - **Red** (Archaic)—deer, bighorn sheep, pronghorn antelope, squirrels, rabbits, fruits, nuts, vegetables, leaves, cactus fruit, grass seed, agave hearts, yucca blossoms, and tansy mustard seeds.
 - **Green** (Early farmers)—corn, beans, squash, agave, fewer wild plants and animals than previously.
4. Have students use a regular pencil or pen to add the foods that they personally ate today. (Have them use Worksheet 4-2 to continue to keep track of the foods they eat over the next few days.)
5. Divide class into small groups and have them compare their food charts with each other and with the foods of ancient Arizonans. Discuss similarities and differences. Ask which group, including themselves, ate the most balanced diet. (The Archaic people had the most balanced diet.) Ask why they think the Archaic people gave up a way of life that was better for them.

CLOSURE

Group discussion or individual questions:

1. Summarize how agriculture changed the lives of early Americans as presented in Chapter 3. Repeat for Chapter 4. Compare the two summaries.
2. Why would people adopt agriculture if their diets detriorate nutritionally?
3. Was agriculture really progress?
4. Does "progress" often involve trade offs in modern America? List examples on the board.

EVALUATION

Have each student write a reply to the following questions:
• Knowing what we do about diet and nutrition, what could the early people of Arizona have done to be sure they had a balanced diet and improve their health?
• Do you think you have to be a scientist to understand how to stay healthy? Use Worksheet 4-2. Evaluate it on the basis of completion and analysis of their personal diets.

EXTENSIONS

Which would you rather be and why: a palynologist, an ethnobotanist, or a zooarchaeologist?

Divide class into small groups. Assign a food group from the pyramid to each group. Ask each group to investigate and report on wild foods found in Arizona in their food group. Be sure to have students explain what can happen if you don't get enough foods from this group.

LINKS

Discovering Arizona, Chapters 1, 2, 3

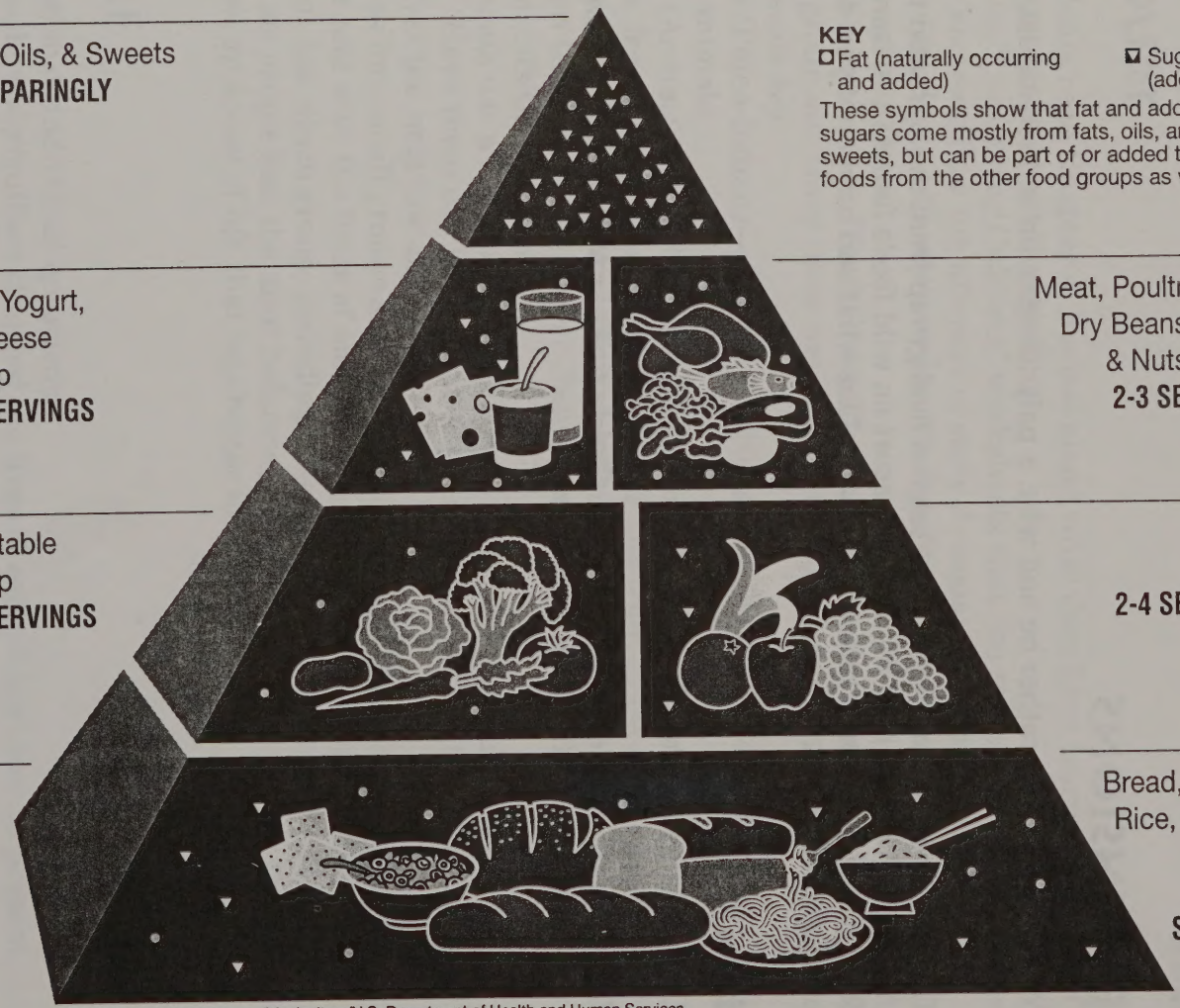
Intrigue of the Past: A Teacher's Guide to Fourth through Seventh Grades.
Lesson 13 "Pollen Analysis"

WORKSHEET 4-1

Name _____

FOOD GUIDE PYRAMID

A Guide to Daily Food Choices



SOURCE: U.S. Department of Agriculture/U.S. Department of Health and Human Services

WORKSHEET 4-2

Name _____

FOODS I EAT

Look at each day and compare your diet to the Food Guide. Give yourself a ☆ beside each day that you ate a balanced diet.

Date	Breakfast	Lunch	Dinner

5 LESSON PLAN
THE YEARLY CYCLE OF VILLAGE LIFE

Subjects	social studies, art
Skills	comprehension, application, synthesis
Strategies	discussion, cooperative learning, analogy, drawing
Duration	approximately 45 minutes for 3 days
Class size	individuals, groups of 4-5 students

OBJECTIVES

Through studying about early village life in Arizona, students will be able to show the yearly cycle that people beginning a sedentary life go through in order to sustain themselves.

MATERIALS

- Worksheets 5-1 and 5-2, one per student
- Acetate sheets for use on the overhead, two per student
- Markers for use with acetate sheets
- Scotch tape
- Sample of "movie" of the current yearly cycle of people in your town
- Bulletin board paper for alternate activity

WORD LIST

Page 5-7 lists unfamiliar words. The following words are important for study. Use active approaches such as relating the words to the student's preexisting word knowledge, providing repetition of words and engaging students in meaningful use of the words.

- environment
- trade

SETTING THE STAGE

Day 1

Before the lesson make a sample "movie" of the yearly cycle in your town. Draw pictures depicting the cycle on a series of acetate sheets that you then tape together to form a "movie." Tape the first sheet to the last sheet so that a ring is made.

Ask students what a village is. Ask them to compare the group idea of a village to the town or city they live in or near. Ask: What kinds of things do you and your families do during different seasons each year?

PROCEDURE

1. Distribute Worksheet 5-1 to each student and have them fill it in for themselves and their own family.
2. Have students read Chapter 5 aloud, discussing it as the reading proceeds.
3. End this day by telling the students that tomorrow they will be filling in a worksheet like the one they did today, only it will be about the Ancient people of Arizona. They will also be working in groups on an art activity.

Day 2

1. Divide the students into groups of 4 or 5.
2. Quickly review what was learned yesterday.
3. Distribute Worksheet 5-2 to each student. Allow them to fill these out in groups, using their text. Review these by walking around the classroom, making sure the students are on the right track.
4. Tell the students that they will be making "movies" of the yearly cycle of the early Arizonans (They may choose Arizonans in general, or pick a specific group such as the Hohokam, Mogollon, or Anasazi.) Demonstrate the sample movie you have made, using the overhead.
5. Distribute acetate sheets and markers. Each group should decide among themselves how to divide up the work. There should be about 8-10 pictures made in each group. Encourage students to show the housing, tools, crops, animals, environment, that are particular to each season for the group of people they have selected. Have them write a "script" for the movie. They may need more than this one session to complete the activity.

CLOSURE

When the groups are completed, have them share their "movies" with the whole class. Discuss their ideas as they share.

Day 2

Alternate Activity by Donna Benge
Before class make a giant quarter of a circle on 4 pieces of bulletin board paper.

1. Quickly review what was learned yesterday.

2. Distribute Worksheet 5-2 to each student. Allow them to fill these out in groups, using their text. Review these by walking around the classroom, making sure the students are on the right track.
3. Divide the class into four groups. As a class select a culture to work with. Have one group make a winter scene showing what it might look like outside, some houses, people (dressed for the season) and what they might be doing. Another group does spring, etc.

CLOSURE

Have each group post and explain their section. Discuss each section as it is posted. Compile all the sections into one giant circle.

EVALUATION

Individual: Worksheets 5-1 and 5-2
Group: Films or giant seasonal pictures

LINKS

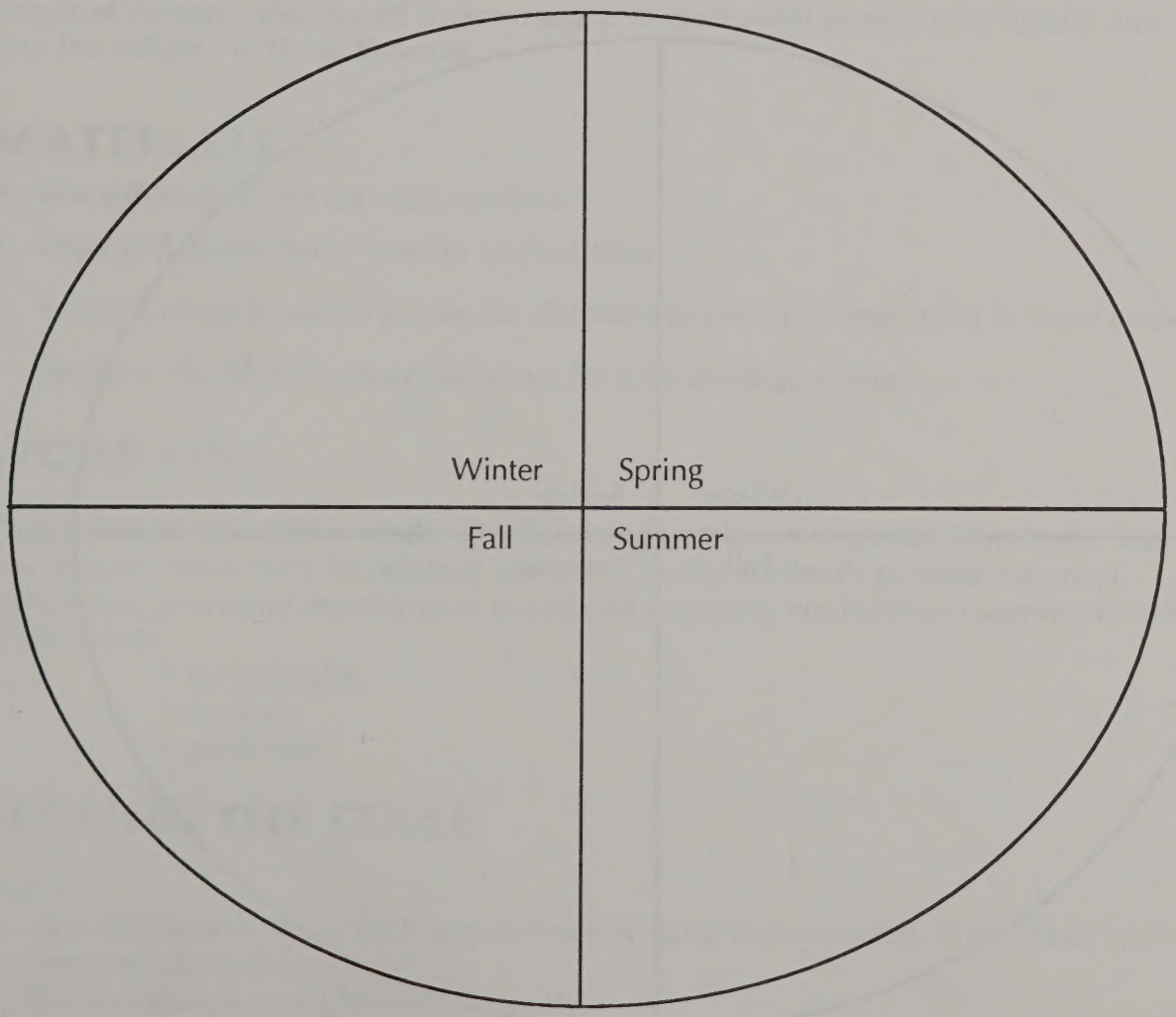
Discovering Arizona Chapters 1, 3, 4
Intrigue of the Past: A Teacher's Activity Guide for Fourth through Seventh Grades
Lesson 2 "Culture Everywhere"

WORKSHEET 5-1

Name_____

THE SEASONS

In the chart below fill in various things that you and your family do during different seasons of the year. These should be things that you tend to do every year, such as: go to school, grow a garden, etc.

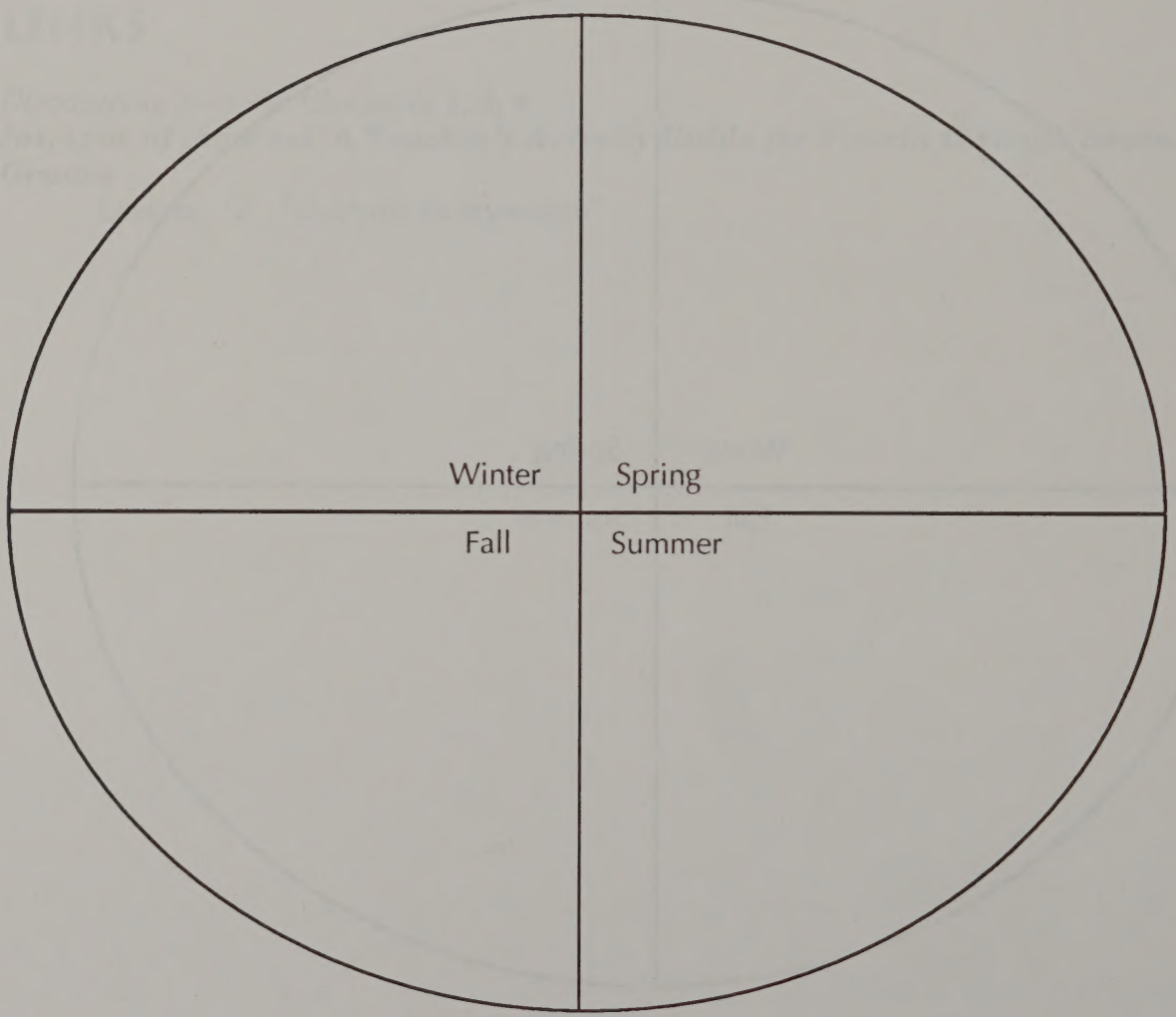


WORKSHEET 5-2

Name_____

THE SEASONS

In the chart below fill in various things Arizonans did during different seasons of the year. Think about what you learned in Chapter 5 in order to complete this chart.





LESSON PLAN
LEAVING THE VILLAGES

Subjects	social studies, language arts
Skills	analysis, evaluation
Strategies	map skills, critical thinking, brainstorming, discussion, writing
Duration	1 hour, 1 day
Class size	any—whole group

OBJECTIVES

Through studying about the different theories as to why the early Native American people of Arizona abandoned their villages, students will be able to critically analyze the validity of these theories.

MATERIALS

- Worksheet 6-1, one for each student.
- Copy of Arizona maps, one for each student
- Various maps to use as guides for students to use in adding ruins to their maps.
- Books on Southwestern archaeology for interested students

WORD LIST

Page 6-8 lists unfamiliar words. The following words are important for study. Use active approaches such as relating the words to the student's preexisting word knowledge, providing repetition of words and engaging students in meaningful use of the words.

- catastrophe
- erosion
- prejudice

SETTING THE STAGE

Day 1

1. Ask students to share their experiences visiting various ruins. Have class brainstorm what a ruin is.
2. Have students read Chapter 6 silently.

PROCEDURE

1. Distribute Worksheet 6-1 to each student.
2. Ask: What were the various theories from in Chapter 6 concerning the abandonment of the villages?
3. Have students fill out Worksheet 6 -1. When they have completed the worksheet go over each question with the class.

 Ask: How would you convince a believer in extraterrestrials that Native Americans build the cliff dwellings and dug the irrigation canals?

 Ask: Why do you think the author said extraterrestrial believers are racist?
4. Distribute the Arizona maps to students. Have various resources in the classroom, such as atlases, encyclopedias, highway maps, Southwest archaeology books, and brochures from various ruins.
5. Have the students use the resources to mark the ruins listed on their maps. This may be done in class or as homework.

CLOSURE

Ask students to write a paper explaining to a tourist why there are Indian ruins in Arizona today. Ask students to share any new theories they might personally have, along with justifications.

EVALUATION

Evaluate student learning by using the closure activity and their completed map.

EXTENSION

Visit a site. Develop a worksheet about the site to guide the students in their visitation of it. If possible work with a local archaeologist to prepare the worksheet or give a guided tour of the site.

LINKS

Discovering Arizona Chapter 1
Intrigue of the Past: A Teacher's Activity Guide for Fourth through Seventh Grades

Lesson	1	"Why is the Past Important?"
Lesson	4	"Context"
Lesson	23	"The Road Showdown"
Lesson	24	"A Journey Back in Time: A Guided Imagery"
Lesson	28	"Take Action—Save the Past"

WORKSHEET 6 - 1

Name _____

Record below the evidence archaeologists would look for to help prove each theory why the early Arizonans abandoned their villages.

Extraterrestrials came to visit.

Catastrophes occurred, such as volcanic eruptions, earthquakes, floods or fires.

Native Americans had to wander in search of food.

A major drought occurred.

Erosion of the soils took place.

Disease took its toll.

Raiding and warfare forced people to leave.

7 LESSON PLAN

THE SPANISH EXPLORERS

Subjects	social studies, language arts
Skills	knowledge, comprehension synthesis
Strategies	reading, creative writing, map skills, research skills, cooperative learning
Duration	2 days—Day 1, 1 hour; Day 2, 1/2 hour
Class size	any—whole group and individual

OBJECTIVES

Through studying about the Spanish exploration of the Southwest, students will be able to explain the main differences in the Native American and Spanish cultures. They will be able to explain in their own words the different viewpoints of members of the cultures.

MATERIALS

- Map and key, one per student
- Map of Mexico
- Encyclopedias
- Grade level appropriate history books

WORD LIST

Page 7-10 lists unfamiliar words. The following words are important for study. Use active approaches such as relating the words to the student's preexisting word knowledge, providing repetition of words and engaging students in meaningful use of the words.

- fertile
- heritage

SETTING THE STAGE

Day 1

1. Ask: What do you know about European exploration of Arizona? Ask: What do you know about Coronado?

2. Distribute maps to each student.

3. Read Chapter 7 aloud and discuss as a whole group. Emphasize what happened according to different perspectives.

4. During the discussion, have students color on their maps the areas that were visited by the various Spanish explorers and missionaries (used attached key). Point out the following places on the map of Mexico: Ciliacan, Mexico and Compostela, Mexico.

HOMEWORK

5. Divide the class into cooperative groups of four. Within this group of four they will work in pairs. One pair will represent explorers with Coronado's expedition and the other pair will be the Native Americans. Have the latter pair write a story as if they were a Native American who was telling a friend from another village about the visit of Coronado's expedition.Have the explorer pair make a journal entry as if they were a member of Coronado's party. In this journal entry they should explain what they found at one of the villages they visited as part of Coronado's party. In both of these writings, students should describe what the people wore, what they ate, what tools and animals they had, and other things that might help explain how they lived. Students should describe their attitudes about the other group of people.

CLOSURE

Day 2

Have the groups of four confront each other with how they feel about one another. Next have all the explorers and all the Native Americans confront each other. Students should talk about what they think the future will be for these other people and how they will affect their own group.

EVALUATION

Stories and journal entries—students should show differences in viewpoint and accurate reflections of the information given in Chapter 7.

EXTENSIONS

1. Show students pictures that show different viewpoints, such as close-ups of eggs, how an ant would see a flower, etc. (*National Geographic World Explorer* is a good source.)

2. Divide class into pairs. Give each pair of students the name of a famous explorer. Have encyclopedias and history books available for students to use to research their explorers. A good way to divide the work is for one student to be the reader and the other one the recorder. Allow students about 15-20 minutes to complete a brief description of what their explorer did.

EXPLORERS

William Baffin
Vasco Nuñez de Balboa
Jeanne Baré
Daniel Boone
Louis Antoine de Bougainville
James Bridger
Stephen Burrough
John Cabot
Sebastian Cabot
Pedro Álvares Cabral
Diogo Cao
Philip Carteret
Jacques Cartier
René Robert Cavelier
Sieur de la Salle
Samuel de Champlain
Richard Chancellor
William Clark
Christopher Columbus
James Cook
Francisco Vasquez de Coronado
Hernando Cortés
Pero da Covilha
Vasco Da Gama
Juan Ponce de León
Hernando de Soto
Bartolomeu Dias
Sir Francis Drake
Eric the Red
Lief Ericsson
Sir Martin Frobisher
Robert Gray
Henry Hudson
Willem Janszoon
Louis Jolliet
Meriwether Lewis
Ferdinand Magellan
Father Jacques Marquette
Jean Nicolet
Pero Fernandes de Queiros
Zebulon Montgomery Pike
Francisco Pizarro
John Smith
Abel Tasman
Luis Vaz Torres
Giovanni da Verrazano
Amerigo Vespucci
Samuel Wallis
Sir Hugh Willoughby

3. Pairs of students then meet with another pair of students and tell about their explorer. This should take only 5-10 minutes.

LINKS

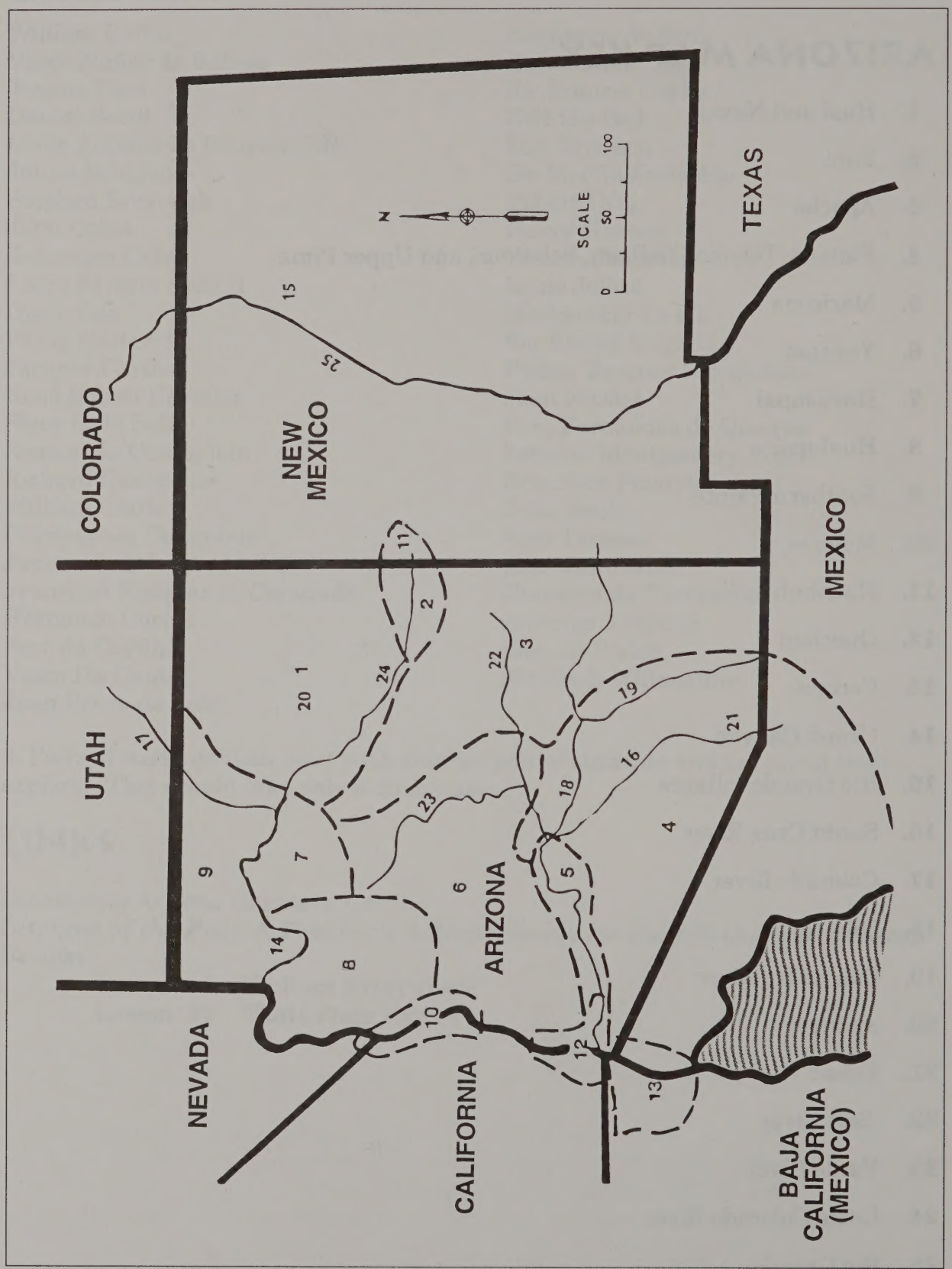
Discovering Arizona Chapters 1, 8
Intrigue of the Past: A Teacher's Activity Guide for Fourth through Seventh Grades

Lesson 2 "Culture Everywhere"
Lesson 27 "State Place Names"

WORKSHEET 7-1

ARIZONA MAP KEY

1. Hopi and Navajo
2. Zuni
3. Apache
4. Pimans: Tohono O'odham, Sobaipuri and Upper Pima
5. Maricopa
6. Yavapai
7. Havasupai
8. Hualapai
9. Southern Paiute
10. Mohave
11. Hawikuh
12. Quechan
13. Cocopa
14. Grand Canyon
15. Rio Grande villages
16. Santa Cruz River
17. Colorado River
18. Gila River
19. San Pedro River
20. Awatovi
21. Tubac
22. Salt River
23. Verde River
24. Little Colorado River
25. Rio Grande


COLORADO
NEW MEXICO
TEXAS
UTAH
ARIZONA
MEXICO
NEVADA
CALIFORNIA
BAJA CALIFORNIA (MEXICO)
N
SCALE
0
50
100
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
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24
25

8 LESSON PLAN

HISTORICAL ARCHAEOLOGY

Subjects	social studies, language arts
Skills	comprehension, application
Strategies	writing, reading, discussion
Duration	two sessions: approximately 45 minutes and about 1/2 hour
Class size	any—whole group and pairs

OBJECTIVES

Through studying about historical archaeology, students will explain the importance of archaeological studies of historic times.

MATERIALS

- Worksheet 8-1 for each student
- Worksheet 8-2 for each pair of students
- Exploring Time Supplement
- Worksheet 8-3 for each student

WORD LIST

Page 8-5 lists unfamiliar words. The following words are important for study. Use active approaches such as relating the words to the student's preexisting word knowledge, providing repetition of words and engaging students in meaningful use of the words.

- adobe
- porcelain
- sherd

SETTING THE STAGE

Day 1

Before explaining anything about historical archaeology, ask the students to write a 2-3 paragraph description telling about what they did yesterday at school.

PROCEDURE

1. As a class, read and discuss the first two pages of Chapter 8.
2. Have students trade papers that they wrote during "Setting the Stage." Have

them pretend that they are an historical archaeologist finding this paper in the future. Based on the information in the paper, have students attempt to answer the Section 1 questions found on Worksheet 8-1. (They will probably not be able to answer some of the questions. Have them leave these blank.)

3. Have students figure out what artifacts might be left at the school or in the town that could help fill in the unanswered questions. (Sources might be desks, the playground, cafeteria, etc.) Have students fill in Section 2, Worksheet 8-1.
4. Discussion question: How do history and archaeology work together to tell us a complete picture of life in the past?

Day 2

1. Divide the class into pairs and have students read the section of Chapter 8 entitled "Archaeology and Transportation."
2. With their partners, have them fill in Worksheet 8-2.
3. Follow-up with a class discussion focusing on changes in each category's characteristics before and after the railroad's arrival. Ask: What characteristics would the archaeologists use to categorize the artifacts in order to figure these things out?

CLOSURE

Ask: Can you think of the differences in day-to-day life that occurred when electricity became common in households across the United States? Discuss.

EVALUATION

1. Divide class into small groups. Using a class history book, assign different groups different sections from an historic time period to read.
2. Have students discuss: What information contained in the book was probably learned from written records? Which information was probably found archaeologically?

EXTENSIONS

1. Have students classify a list of events as examples of prehistoric or historical archaeology.
2. To their time line started in Chapter 1, add the date A.D. 1539, which shows when the historic period began in Arizona.
3. Exploring time supplement and Worksheet 8-3

LINKS

Discovering Arizona—Chapters 1, 7

Intrigue of the Past: A Teacher's Activity Guide for Fourth through Seventh Grades

Lesson 4 "Context"
Lesson 5 "Chronology: The Time of My Life"
Lesson 6 "Classification and Attributes"
Lesson 7 "Scientific Inquiry"
Lesson 8 "It's in the Garbage"

WORKSHEET 8-1

Name _____

Section 1

Try to answer the following questions based only on the paper you are reading. Do not answer the questions based on something you already know but was not mentioned in the paper. This will take a lot of concentration . . . be careful!

1. Why did people go to this place called "school?"

2. Was there a special building here?

3. How long did this person stay at school? Did they go every day?

4. How old was this person? Were all the people at the school the same age?

5. What did this person eat?

6. How did this person get to and from school?

7. What tool(s) did this person use to write?

8. How many people came together at this school?

9. Did people live at the school?

10. How did this person get food?

Section 2

List the artifacts you think of and where you would expect to find them.

Artifact	Where to find it

WORKSHEET 8-2

Name _____

Characteristics of artifacts before and after the arrival of the railroad to Arizona.

	dishes	house styles	toys	Papago pottery
Before				
After				

EXPLORING TIME

There are many ways of showing time. Even scholars can't agree on one approach. You may even see several in this book!

A.D. In ancient calendars, years were generally numbered according to the year of a ruler's reign. About A.D. 525, a Catholic monk name Dionysius Exiguus suggested that years be counted from the birth of Christ. The number of years are preceeded by the Latin words *Anno Domini,* which mean "in the year of the Lord." It is usually abreviated A.D. and is still used today. Today, scientists believe that Dinoysius was wrong about the year of Christ's birth. Most believe the year of Christ's birth was a few years earlier.

The first century of the Christian era began in A.D. 1, the second in A.D. 101, and so on. In order to avoid the specific reference to Christianity, some writers use **C.E.** (Common Era) instead of A.D. and **B.C.E.** (Before the Common Era) instead of B.C.

B.C. The year before A.D. 1 is called 1 B.C. (before Christ).

B.P. Some archaeologists prefer not to use A.D. and B.C. to show time. In part because of radiocarbon dating and other dating methods which measure time from the present, they use "Before the Present" or "B.P." For example, 100 B.C. would be 2005 B.P. That is A.D. 1995 + 100 B.C. = 2005 B.P. Many archaeologists have adopted the use of B.P. even though they are not involved in dating methods since A.D. and B.C. are so specific to Western culture.What might be a problem with using this designation?

Years Ago This is used to show how many years ago some event occurred. Paleontologists use it to show things that happened millions of years ago.

ANCIENT CALENDARS

A *calendar* is a system for showing the year and dividing it into smaller units. Calendar systems were created thousands of years ago. Sometimes people kept track of the solar year by standing in one special spot and watching the sun rise daily. They watched specific landmarks or special stone markers on the horizon to see when the sun would reach them. This told them what time of year it was. Scientists found ancient notched sticks that might have been used for counting and marking the passage of each lunar (moon) month.

THE MAYAN CALENDAR

Not all calendars were lunar. The Mayans divided the year into 18, 20-day months, with a 5-day period at the end.

The earliest complete calendars were probably based on observations of the moon. The moon's phases occur regularly and are easily watched. Early people began a

NAMES OF THE ROMAN MONTHS

In every Western European language, the months keep their Roman (Latin) names.

English names are **January**, for *Janus*, god of beginnings and endings.

February is from *Februalia*, a time for religious purification.

March is named for *Mars*, the Roman god of war.

April is from Old English words *april, aperil,* and *averil* from Old French and Latin words. They are probably from the ancient Etruscan word *apru*—April. This was perhaps from the Greek word *aphro* —short for *Aphrodite,* the godess of love.

May, for *Maia,* the goddess of plant growth.

June is from the Latin word *Junius,* which probably came from *Juno,* the Roman Goddess of women and marriage.

July honors *Julius Caesar.*

The first Roman Emperor, *Caesar Augustus,* chose the next month, **August**, for himself.

The names of the rest of the months are based on the Latin (Roman) numbers for their original place in the calendar:

September, from Latin *septem* meaning seven. It was originally the seventh month.

October, from *octo*—eight. **November**, *novem*—nine, and **December**, *decem*—ten.

new month when they first saw the new crescent moon. The time between new moon to new moon is about 29 and one-half days. Because of this lunar calendar months contain either 29 or 30 days. Twelve lunar months total 354 and one-third days and form a lunar year. How much shorter than a solar year is a lunar year?

Since farmers are dependent on warm weather, a solar calendar works better for them. To make their calendars accurate for the sun early farmers made lunar-solar calendars by adding an additional "leap" month to keep the seasons occuring at the same time of year every year.

Today, we use the Gregorian calendar. The Gregorian calendar was first introduced in A.D. 1582. The average length of a Gregorian year is close to that of the solar year—about 365 and one-fourth days. The Gregorian calendar is created by specific rules that define it rather than depending on observation.

GREGORIAN CALENDAR

The Julian leap-year rule created three leap years too many out of every 385 years. By the 1500's the equinoxes and solstices weren't happening on the their assigned calendar days. The Easter holiday is determined by the *vernal* (spring) equinox. This was a problem for the Catholic Church, so Pope Gregory XIII decided to change the calendar. He worked with an astronomer named Christopher Clavious (A.D. 1537-1612). Their "Gregorian Calendar" is still in use today. It is a solar calendar and doesn't involve the moon. It includes rules for deciding the date of religious holidays. Some of these rules are based on both the sun and the moon.

DAYS OF THE WEEK

For "weeks," the Babylonians used a seven-day period of time, the week, that had nothing to do with astronomy. The "week" was adopted by the Jews. The Romans associated a cycle of seven days with the Sun, the Moon, and the five known planets. Their names became attached to the days of the week:

Sunday—*dies solis,* Sun's day
Monday—*dies Lunae,* Moon's day
Tuesday—*Martis dies,* Mar's day (the war god)
Wednesday—*Mercurii dies,* Mercury's day (the god of commerce and messenger to the gods)
Thursday—*Jovis dies,* Jupiter's day (the god of the sky)
Friday—*Veneris dies,* Venus's day (the Roman goddess of love, associated with the Greek Aphrodite)
Saturday—*dies Saturni,* Saturn's day

The Germanic and Scandanavian peoples substituted their gods which they associated with the Roman gods Mars, Mercury, Jupiter, and Venus. This resulted in the modern English words:

Tuesday—*Tiu's* or *Tiw's* day
Wednesday—*Woden's* (or *Wotan's* or *Odin's)* day
Thursday—*Thor's* day)
Friday—*Frigg's* (or *Fria's*) day

The **Hebrew** calendar in use today begins at the Hebrew date of Creation, about 3,760 years before the Christian era. The week consists of seven days, ending with the Sabbath (religious day) on Saturday. The year consists of 12 lunar months—*Tishri, Cheschvan, Kislev, Tebet, Shebat, Adar, Nisan, Iyar, Sivan Tammus, Ab,* and *Elul*—which are either 29 or 30 days long. Be ause a year is 11 days longer than 12 lunar moths, a 13th month, *ve-Adar*, is added seven times during every 19 year cycle.

Muslims begin their calendar at the day and year when Mohammed fled from Mecca to Medina (July 16, A.D. 622 by the Gregorian calendar). There are 12 lunar months of 30 or 29 days, making the year only 354 days long. Because of this the months move backward through all the seasons and complete a cycle every 32 $^{1}/_{2}$ years. The months are: *Muharram, Safar, Rabi I, Rabi II, Jumada I, Jumada II, Rajab, Shaban, Ramadan, Shawwal, Zulkadah,* and *Zulhijjah.*

WORKSHEET 8-3

Name _____

Read the background information and then figure your birth date and year from the following calendars.

MONTHS

Gregorian (Basis: Sun)	**Jewish** (Basis: Moon)	**Islamic** (Basis: Moon)	**Hindu** (Basis: Moon)
Month/Days	Month/Days	Month/Days	Month/Days
January 31	***Tishri*** Sept–Oct 30	***Muhrram*** Sep–Oct 30	***Caitra*** Mar–Apr 29–30
February 28-29	***Heshvan*** *Oct–Nov 29–30*	***Safar*** Oct–Nov 29	***Vaisakha*** Apr–May 29–30
March 31	***Kislev*** *Nov–Dec 29–31*	***Rabi I*** Nov–Dec 30	***Jyaistha*** May–Jun 29–30
April 30	***Tevet*** Dec–Jan 30	***Rabi II*** Dec–Jan 29	***Asadha*** Jun–Jul 29–30
May 31	***Shevat*** Jan–Feb 30	***Jumada I*** Jan–Feb 30	***Dvitiya Asadha*** (leap years)
June 30	***Adar*** Feb–Mar 29-30	***JumadaI*** Feb–Mar 29	***Sravana*** Jul–Aug 29–30
July 31	***Adar Sheni*** *(leap years)*	***Rajab*** Mar–Apr 30	***Dvitiya Sravana*** (leap years)
August 31	***Nisan*** Mar–Apr 30	***Shaban*** Apr–May 39	***Bhadrapada*** Aug–Sep 29–30
September 30	***Iyar*** Apr–May 29	***Ramadan*** May-Jun 30	***Asvina*** Sep–Oct 29–30
October 31	***Sivan*** May–Jun 30	***Shawwal*** Jun–Jul 29	***Karttika*** Oct–Nov 29–30
November 30	***Tammuz*** Jun–Jul 29	***Dhuu al-Quadah*** Jul–Aug 30	***Margasirsa*** Nov–Dec 29–30
December 31	***Av*** Jul–Aug 30	***Dhu al-Hiijjah*** Aug–Sep 29–30	***Pausa*** Dec–Jan 29–30
	Elul Aug–Sep 29		***Magha*** Jan–Feb 29–30
			Phalguna Feb–Mar 29–30

YEARS

Chinese Animal Years and Times 1972–2007

Shu (Rat) 1971, 1984, 1996
Lung (Dragon) 1976, 1988, 2000
Hou (Monkey) 1980, 1992, 2004
Niu (Ox) 1973, 1985, 1997
She (Serpent) 1977, 1989, 2001
Chi (Cock) 1981, 1993, 2005
Hu (Tiger) 1974, 1985, 1998
Ma (Horse) 1978, 1990,2002
Kou (Dog) 1982, 1994, 2006
T'u (Hare) 1975, 1987, 1999
Yang (Sheep) 1979, 1991, 2003
Chu (Boar) 1983, 1985, 2007

My Gregorian Birthday is _____
My Jewish Birthday is _____
My Islamic Birthday is _____
My Hindu Birthday is _____
My Chinese Year sign is _____

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A3 RESOURCES FOR TEACHERS

MUSEUMS AND PLACES TO VISIT

Northern Arizona
Central Arizona
Southern Arizona

ORGANIZATIONS

Educational
Universities and Colleges
State Agencies
Federal Agencies
U.S. Bureau of Indian Affairs
U.S. Bureau of Land Management
U.S. Bureau of Reclamation
National Park Service
U.S. Forest Service
Indian Tribes

SUGGESTED READING

Fiction
Nonfiction
Stories and Legends
Magazines and Journals

AUDIO-VISUALS

Filmstrips
Videos
Computer Programs

MUSEUMS AND PLACES TO VISIT

Many of these museums, sites, parks, and monuments have educational programs or provide school tours.

NORTHERN ARIZONA

☐ **Canyon de Chelly National Monument**
P.O. Box 588
Chinle, Arizona 85503
602-674-5436
3 miles east of Chinle. *Anasazi sites and Navajo culture. Guided tours.*

☐ **Casa Malpais National Historic Landmark**
Contact Casa Malpais Restoration Laboratory Museum
602-333-5375
On the outskirts of Springerville. *13th-century Anasazi pueblo. Self-guided trail and ongoing excavations.*

☐ **Elden Pueblo**
602-556-7410
On Highway 89 north of Flagstaff. *Sinagua ruin; excavation and stabilization ongoing, summer program for teachers and families.*

☐ **Havasupai Museum**
P.O. Box 10
Supai, Arizona 86435
602-448-2611
Displays on Havasupai culture.

☐ **Homolovi Ruins State Park**
Winslow, Arizona
602-289-4106
Ancestral Hopi pueblos, one of the last stopping places for Hopi clans making their way to the Hopi mesas. Guided tours, education programs.

☐ **Kaibab Paiute Tribe**
Camper/Trailer Park and Museum
Pipe Springs, Arizona 86022
602-643-7245
Displays on Paiute culture.

☐ **Kinishba Pueblo National Historic Landmark**
Whiteriver, Arizona 85941
602-338-4625
15 miles west of Whiteriver on SR 73, administered by Fort Apache Cultural Center. *Partially restored Mogollon pueblo.*

☐ **Kinlichee Tribal Park**
Window Rock, Arizona
State Route 264 west of Window Rock and 22 miles to Cross Canyon Trading Post, then 2 ½ miles north to Kinlichee and Cross Canyon Ruins. *Self-guided tour of Anasazi ruins.*

☐ **Little Black Mountain Petroglyphs**
Bureau of Land Management, Arizona Strip District
801-673-3545
20 miles south of St. George, Utah. *Prehistoric rock art.* Interpretive trail.

☐ **Lyman Lake State Park**
P.O. Box 1428
St. Johns, Arizona 85936
602-337-4441
Petroglyph trail tours. Summer archaeological field courses for school teachers conducted by Arizona State University.

☐ **Mohave Museum of History and Arts**
400 W. Beale Street
Kingman, Arizona 86401
602-753-3195
History and prehistory of northwestern Arizona.

☐ **Monument Valley Park**
Navajo Tribal Park
P.O. Box 93
Monument Valley, Utah 84536
801-727-3287
Displays on Navajo culture.

☐ **Museum of Northern Arizona**
Fort Valley Road
Flagstaff, Arizona 86002
602-774-5211
Exhibits illustrate Anasazi and historic Pueblo cultures. Educational programs available.

☐ **Navajo National Monument**
Tonalea, Arizona 86044
602-672-2366
20 miles southwest of Kayenta, turn north on Route 564 to Monument headquarters, 9 miles west of U.S. 160. *Anasazi cliff dwellings.*

☐ **Navajo Tribal Museum**
P.O. Box 308
Window Rock, Arizona 86515
602-871-6673
Displays on Navajo culture and history and Anasazi prehistory.

☐ **Petrified Forest National Park**
Holbrook, Arizona
602-524-6228
Off I-40, 25 miles east of Holbrook. *Anasazi ruins and petroglyphs.*

☐ **Pipe Spring National Monument**
602-643-7105
14 miles west of Fredonia on Highway 389.
1863 Ranch site along famous Honeymoon trail, resettled and fortified by Mormon colonists in 1870.

☐ **Tusayan Ruin and Museum**
P.O. Box 129
Grand Canyon, Arizona 86023
602-638-2305
On East Rim Drive in Grand Canyon National Park. *Anasazi ruin built around A.D. 1200.*

☐ **Walnut Canyon National Monument**
Rte 1, Box 25
Flagstaff, Arizona 86001
602-526-3367
7 ½ miles east of Flagstaff on I-40, then 3 miles south from Exit 204 on park entrance road. *12th and 13th century Sinagua cliff dwellings.*

☐ **Wupatki National Monument**
Tuba Star Rte
Flagstaff, Arizona 86001
602-556-7040
15 miles north of Flagstaff on Highway 89, then east on loop road 22 miles to visitors' center. *Extensive Sinagua ruins.*

CENTRAL ARIZONA

☐ **Ak-Chin Eco-Museum**
Route 2, Box 635
Maricopa, Arizona 85239
602-568-2221
Displays on Hohokam archaeology and Pima and Papago culture.

☐ **Arizona State University Anthropology Museum**
Anthropology Building
Arizona State University
Tempe, Arizona 85287
602-986-1683
Displays of recent excavations.

☐ **Besh-Ba-Gowah Archaeological Park**
Globe Arizona
602-425-0320
1-800-448-8983 (Greater Globe-Miami Chamber of Commerce)
1 mile south of Globe on Jess Hayes Road. *Excavated and stabilized Salado site, dating to A.D. 1225–1400, and museum.* Open daily.

☐ **Blythe Intaglios**
Bureau of Land Management, Yuma District
602-726-6300
20 miles north of Blythe, California. *Giant prehistoric ground figures.*

☐ **Colorado River Indian Tribes Museum and Library**
Route 1, Box 23-B (2nd and Mohave Rd.)
Parker, Arizona 85344
602-669-9211, ext. 339
Artifacts and information about Colorado River tribes.

☐ **Desert Caballeros Western Museum**
21 N. Frontier Street
P.O. Box 1446
Wickenburg, Arizona 85358
602-684-2272
The Hall of History represents turn-of-the-century Wickenburg.

☐ **Desert Botanical Gardens**
1201 N. Galvin Parkway
Phoenix, Arizona
602-941-1217
Includes display of Piman rancheria, showing Native American uses of plants.

☐ **Gila County Historical Museum**
Globe, Arizona
1-800-448-8983 (Greater Globe-Miami Chamber of Commerce)
Displays on regional history and prehistory.

☐ **Gila Pueblo**
Eastern Arizona College
Globe, Arizona
602-425-3151
1-800-448-8983 (Greater Globe-Miami Chamber of Commerce)
South of Globe on Jess Hayes Road, 1.5 miles past Besh-Ba-Gowah.
Displays of artifacts from Salado pueblo (college is built on site).

☐ **Gatlin Site**
Gila Bend, Arizona
602-683-2002
3 miles north of Gila Bend, on Stout Road off old U.S. Highway 80.
A thousand-year-old Hohokam village with platform mound, houses, and canal.

☐ **Gila River Arts and Crafts and Gila Heritage Park**
P.O. Box 457
Sacaton, Arizona 85247
602-562-3411
Between Phoenix and Tucson, about ½ mile west of I-10.
Reconstructed houses of Hohokam, Pima and Papago, Maricopa, Apache, plus museum displays of Piman and Maricopa history and Hohokam prehistory.

☐ **Harquahala Peak Observatory**
Bureau of Land Management, Phoenix District
602-780-8090
80 miles west of Phoenix. Call for brochure and directions.
Historic solar observatory built by the Smithsonian Institution.

☐ **The Heard Museum**
Education and Public Programs Division
22 E. Monte Vista Road
Phoenix, Arizona 85004
602-252-8840
Prehistoric and historic exhibits; education programs.

☐ **Hoo-Hoogam Ki Museum**
Route 1, Box 216
Scottsdale, Arizona 85256
602-941-7379
Displays by the Salt River Pima-Maricopa tribe on Hohokam and Pima-Maricopa culture.

☐ **Mesa Southwest Museum**
53 North McDonald
Mesa, Arizona 85201
602-834-2230
602-834-2169
Replicas of Paleo-Indian cave, Salado cliff dwelling, Hohokam pit house and compound. Education program and opportunities to work at archaeology sites and in lab.

☐ **Montezuma Castle National Monument and Montezuma Well**
Camp Verde, Arizona
602-567-3322
Five miles north of Camp Verde and 2.5 miles east of I-17.
Sinagua cliff dwelling, irrigation works, and limestone sinkhole with cliff dwellings.

☐ **Painted Rocks Park**
Bureau of Land Management, Phoenix District
602-780-8090
15 miles west of Gila Bend on I-8, then 12 miles north on Painted Rocks Road.
Hohokam petroglyphs.

☐ **Park of the Canals—Hohokam/Mormon Irrigation Canals**
1710 N. Horne Road
Mesa, Arizona
602-644-2351
Ruins of Hohokam village and irrigation canal networks. Canals were rediscovered and used by Mormon settlers.

☐ **Pueblo Grande Museum and Cultural Park**
4619 E. Washington St.
Phoenix, Arizona
602-495-0900
Between 44th and 48th Streets, west of the Hohokam Freeway.
Hohokam village ruins, irrigation canals, and prehistoric ballcourt.

☐ **Salt River Project Museum**
1521 North Project Drive
Phoenix, Arizona
602-236-2280
History of Salt River Project and Hohokam artifacts.

☐ **Sharlott Hall Museum**
415 W. Gurley Street
Prescott, Arizona 86301
602-445-3122
History and prehistory of Prescott area. Educational programs available.

☐ **Tempe Historical Museum**
809 E. Southern Avenue.
Tempe, Arizona 85282
602-350-5105
Displays of local history and prehistory.

☐ **Tonto National Monument**
National Park Service
HC 02, Box 4602
Roosevelt, Arizona 85545
602-467-2241
3 miles southeast of Roosevelt Lake on Highway 88.
Three 14th century Salado cliff dwellings. Upper ruins can be visited only on ranger-guided tours scheduled in advance.

☐ **Tuzigoot National Monument**
P.O. Box 68
Clarkdale, Arizona 86324
602-634-5564
Partially restored Sinagua pueblo dating between A.D. 1100 and 1450.

☐ **White Mountain Apache Cultural Center**
P.O. Box 700
Whiteriver, Arizona 85941
602-338-4625
Displays on Apache culture.

SOUTHERN ARIZONA

☐ **Amerind Foundation, Inc.**
Dragoon Arizona 85609
602-586-3666
64 miles east of Tucson on I-10, then 1 ¼ miles toward Dragoon.
Private museum with prehistoric and historic artifacts from southern Arizona and Northern Mexico. Open daily.

☐ **Arizona-Sonora Desert Museum**
2021 N. Kinney Road
Tucson, Arizona 85743
602-883-1380
15 miles west of Tucson.
New display at museum of Paleo-Indian mammoth kill site. Special programs offer occasional archaeology-oriented programs for children and families.

☐ **Arizona State Museum**
University of Arizona
Tucson, Arizona 85721
602-621-6302
Exhibits include displays on Paleo-Indians, Hohokam, Mogollon, Anasazi, Hopi, Navajo, Apache, and other cultures. Open daily.

☐ **Casa Grande Ruins National Monument**
P.O. Box 518
Coolidge, Arizona 85228
602-723-3172
One mile north of Coolidge on State Rte 87.
Hohokam village site dating from A.D. 900–1450, includes 4-story adobe structure that may have been used for astronomical observations.

☐ **Casa Grande Valley Historical Museum**
110 West Florence Blvd.
Casa Grande, Arizona 85222
602-836-2223
Exhibits on regional history and prehistory.

☐ **Catalina State Park**
P.O. Box 36986
Tucson, Arizona 85740
602-628-5798
North of Tucson on Oracle Highway. *Interpretive trail to Hohokam site.* Educational programs available.

☐ **Dankworth Village Outdoor Classroom**
Bureau of Land Management, Safford District
711 14th Avenue
Safford, Arizona 85546
602-428-4040
Re-creation of an Archaic campsite, a Mogollon pit house, and Salado Pueblo. Designed for use by school groups.

☐ **Eastern Arizona Museum and Historical Society**
Main and Center Streets
Pima, Arizona
History and prehistory of Pima region.

☐ **Empire Ranch**
Bureau of Land Management
Tucson Resource Area
602-722-4289

Fifteen miles north of Sonoita. *Historic cattle ranch and site of annual Grasslands* Festival.

☐ **Fort Bowie National Historic Site**
602-847-2500
12 miles south of Bowie
Ruins of historic army fort, dating to period of Apache-Anglo conflict.

☐ **Fort Lowell City Park and Museum**
2900 N. Craycroft
Tucson, Arizona
602-885-3832
Historic army post and prehistoric Hohokam site. Museum displays historic and prehistoric material. Guided tours available.

☐ **Fort Yuma Quechan Museum**
P.O. Box 11352
Yuma, Arizona 85366-9352
619-572-0661
Displays on Quechan (Yuman) culture and history.

☐ **Murray Springs Clovis Site and Lehner Mammoth Kill Site**
Bureau of Land Management, Tucson Resource Area
602-722-4289
Along the San Pedro River in the San Pedro Riparian National Conservation Area south of Benson. *Excavated Paleo-Indian sites where mammoths were killed, butchered and roasted.* Interpretive trails.

☐ **Saguaro National Monument East**
3693 S. Old Spanish Trail
Tucson, Arizona 85730-5699
602-296-8576

☐ **Saguaro National Monument West**
2700 N. Kinney Road
Tucson, Arizona 85743
602-883-6366
Information at visitor centers about local prehistory and history. Saguaro National Monument West contains several locations of Hohokam petroglyphs, which are accessible to visitors. Education programs.

☐ **Presidio Santa Cruz de Terrenate**
Bureau of Land Management, Safford District
Tucson Resource Area
602-722-4289
Ten miles west of Fairbank along the San Pedro River in the San Pedro Riparian

National Conservation Area, south of Benson. *Interpretive trail at ruins of a historic Spanish presidio (fort) built in 1776.* The interpretive trail winds among remains of adobe walls.

☐ **Tubac Presidio State Historic Park**
Tubac, Arizona
602-398-2252
Ruins of first Spanish fort (presidio) in Arizona, built in 1752, plus buildings and ruins of later Mexican and Anglo cultures.

☐ **Tucson Botanical Gardens**
2150 N. Alvernon Way
Tucson, Arizona 85712
602-326-9686
Gardens include Native Seeds/Search Mini museum and store (see under organizations), as well as area displaying Native American gardening techniques. Educational programs available for schools, families, children.

☐ **Tumacacori National Monument**
Tumacacori, Arizona
602-398-2341
45 miles south of Tucson on I-19.
Franciscan mission ruins dating to the early 1800s.

ORGANIZATIONS

EDUCATIONAL

☐ **Archaeology in Tucson**
3975 N. Tucson Blvd.
Tucson, Arizona 85716
602-881-2244
Membership program for the Center for Desert Archaeology. Quarterly newsletter, opportunities to participate in Center's research projects, attend site tours, hear lectures.

☐ **Arizona Archaeological and Historical Society**
Arizona State Museum
University of Arizona
Tucson, Arizona 85721
602-621-4011

Monthly lectures offered at University of Arizona, field trips, educational programs primarily for adults; membership includes monthly newsletter and subscription to archaeology journal—*Kiva*.

☐ **Arizona Archaeological Council**
Arizona State Museum
University of Arizona, Tucson 85721
602-621-4011
Statewide organization of professionals and avocationalists. Biannual meetings and symposia on various topics.

☐ **Arizona Archaeological Council,**
Archaeology for the Schools Committee
Contact (1993): Carol Ellick, Chair
Statistical Research, Inc.
P.O. Box 31865
Tucson, Arizona 85751
602-721-4309
Workshops offered throughout the year in Arizona towns and cites (on demand); lesson plans and slide or video programs are available. Members include teachers, educators, archaeologists statewide.

☐ **Arizona Archaeological Society**
P.O. Box 9665
Phoenix, Arizona 85068
This organization has chapters throughout the state in Phoenix, Cave Creek, Carefree, Prescott, Flagstaff, Fredonia, Gila Bend, Payson, Winslow, Douglas, Yuma, Casa Grande, Showlow, Springerville, Sedona, Kingman, Globe, and Safford. Programs offered throughout the year. Organization runs statewide certification program for avocationalists; offers field schools; monthly lectures and field trips; produces newsletters and a publication series, *The Arizona Archaeologist*.

☐ **Arizona Association for Learning in and about the Environment (AALE)**
179 W. Kent Drive
Chandler, Arizona 85224
602-786-9969
This organization supports environmental education programs, conducts workshops, has a bimonthly newsletter

☐ **Arizona Preservation Foundation**
P.O. Box 13492
Phoenix, Arizona 85002
602-256-7525
This organization promotes preservation of historic, prehistoric, and cultural resources; Sponsors annual Governor's Awards for Historic Preservation.

☐ **Arizona Site Steward Program**
State Historic Preservation Office
Arizona State Parks
1300 W. Washington
Phoenix, Arizona 85007
602-542-4009
Trained volunteers organized to help prevent vandalism and looting of important sites throughout state.

☐ **Camp Cooper**
Tucson Unified School District's Environmental Education Center
P.O. Box 40400
Tucson, Arizona 85717
602-743-7422
Archaeology program for TUSD classes, grades 3 through 8. Observers welcome with prior appointment.

☐ **Friends of the San Pedro River**
P.O. Box 374
Sierra Vista, Arizona 85636-0374
602-457-2265
A volunteer organization that supports the Bureau of Land Management to provide recreational opportunities within the San Pedro Riparian National Conservation Area. Programs include tours of mammoth kill sites.

☐ **Native Seeds/Search**
Office and Mini Museum and Gardens
Tucson Botanical Gardens
2150 North Alvernon
Tucson, Arizona 85712
602-327-9123
Organization is dedicated to preservation of heirloom crop and vegetable plants adapted to the Southwest Region. Education about traditional crops and farming, nutrition of ancient foods. Videos for loan or rental, slide programs, Desert Gardening Workshops or Teacher in-service programs possible through requests.

☐ **Prehistorics/Cultural Connections**
Patti Bell
8845 Pine Valley Drive
Tucson, Arizona 85710
602-290-2873
Offers interpretation services and educational materials relating to archaeology and native peoples. Catalog of educational items and prehistoric replicas available in 1994.

☐ **Resource Center for Environmental Education**
P.O. Box 3243
Flagstaff, Arizona 86003
In-class programs and field trips concerning natural and cultural resources. In Coconino County.

☐ **Sabino Canyon Volunteer Naturalists**
5700 N. Sabino Canyon Road
Tucson, Arizona 85715
602-749-8700
Work with Santa Catalina Ranger District, Coronado National Forest to offer interpretive programs including local archaeology (Hohokam).

☐ **Southwest Archaeology Team (SWAT)**
P.O. Box 159
Scottsdale, Arizona 85252
602-834-2169
Affiliated with the Mesa Southwest Museum, team provides opportunities to survey, excavate, and do lab work. Class for children (9 and older) and adults.

☐ **Southwestern Learning Sources**
Barbara Groneman
6440 East Presidio
Scottsdale, Arizona 85254
602-991-0341
Offers kits, workshops, training and programming on Phoenix area prehistory and Pima culture.

☐ **Thinking Caps, Inc.**
P.O. Box 26239
Phoenix, Arizona 85068
602-870-1527
Teaching modules on Arizona archaeology and prehistory, designed to develop critical thinking.

UNIVERSITIES AND COLLEGES

☐ **Arizona State University**
Office of Cultural Resource Management
Department of Anthropology
Tempe, Arizona 85287
602-965-7174

☐ **Arizona State University**
Center for Indian Education
415 Farmer Bldg.
Tempe, Arizona 85287
602-965-6292

☐ **Arizona Western College**
P.O. Box 929
Yuma, Arizona 85364
602-726-1000

☐ **Eastern Arizona College**
600 Church St.
Thatcher, Arizona 85552
602-428-1133

☐ **Eastern Arizona College**
Gila Pueblo Campus
Globe, Arizona
602-425-3151

☐ **Glendale Community College**
6000 West Olive Avenue
Glendale, AZ 85302
602-435-3000

☐ **Mesa Community College**
Department of Cultural Science
1833 W. Southern
Mesa, Arizona 85202
602-461-7306

☐ **Mohave Community College**
1971 Jagerson
Kingman, AZ 86401
602-757-4331

☐ **Navajo Community College**
Tsaile, Navajo Nation, Arizona 86556
602-724-3311

☐ **Northern Arizona University**
Department of Anthropology
Flagstaff, Arizona 86011
602-523-6275

☐ **Northern Arizona University**
Indian Studies Office
Flagstaff, Arizona 86011

☐ **Pima Community College**
Archaeological Center
2202 W. Anklam Road
Tucson, Arizona 85745
602-884-6022

☐ **Prescott College**
220 Grove Avenue
Prescott, Arizona 86301
602-778-2090

☐ **Scottsdale Community College**
9000 East Chaparral Road
Scottsdale, Arizona 85250
602-423-6000

☐ **University of Arizona**
Department of Anthropology
Tucson, Arizona 85721
602-621-2585

☐ **Public Archaeologist**
Arizona State Museum
Tucson, Arizona 85721
602-621-4011

☐ **Office of Indian Programs**
1615 E. 7th St.
Tucson, Arizona 85721
602-621-2784

☐ **Yapavai College**
1100 East Sheldon Street
Prescott, Arizona 86324
602-445-7300

STATE AGENCIES

☐ **Arizona Department of Transportation**
Environmental Planning
P.O. Box 13588

Phoenix, Arizona 85002
602-255-8641

☐ **Arizona State Land Department**
Environmental Division
1616 West Adams
Phoenix, Arizona 85007
602-542-2119

☐ **Arizona State Museum**
University of Arizona
Tucson, Arizona 85721
602-621-4794, 602-621-4011

☐ **State Historic Preservation Office**
Arizona State Parks
1300 W. Washington
Phoenix, Arizona 85007
602-542-4009
Among other things, the SHPO sponsors Archaeology Month, a month-long celebration of Arizona archaeology that occurs in the spring of each year. Part of that month is the Archaeology Fair, which is held in various places in the state.

FEDERAL AGENCIES

All Supervisor's offices of the U.S. Forest Service and Resource Area offices of the Bureau of Land Management have archaeologists on staff. Contact these archaeologists for information on sites on public lands, and on programs that these agencies offer. The National Park Service also has archaeologists at the Western Archeological and Conservation Center in Tucson.

U.S. BUREAU OF INDIAN AFFAIRS

☐ **U.S. Bureau of Indian Affairs**
Phoenix Area Office
P.O. Box 10, Phoenix, Arizona 85001
602-379-6600

U.S. BUREAU OF LAND MANAGEMENT

☐ **BLM State Office**
Siete Square Building

3707 North 7th Street
Phoenix, Arizona 85014
602-650-0509

☐ **Shivwits and Vermillion Resource Area Office**
390 North 3050 East
St. George, Utah 84770
801-673-3545

☐ **Havasu Resource Area Office**
3189 Sweetwater Ave.
Lake Havasu City, Arizona 86403
602-855-8017

☐ **Kingman Resource Area Office**
2475 Beverly Ave.
Kingman, Arizona 86401
602-757-3161

☐ **Phoenix and Lower Gila Resource Area Offices**
2015 W. Deer Valley Road
Phoenix, Arizona 85027
602-780-8090

☐ **Gila and San Simon Resource Area Offices**
711 14th Avenue
Safford, Arizona 85546
602-428-4040

☐ **San Pedro Riparian National Conservation Area Office**
1763 Paseo San Luis
Sierra Vista, Arizona 85635
602-458-3559

☐ **Tucson Resource Area Office**
12661 E. Broadway Blvd.
Tucson, Arizona 85748
602-722-4289

☐ **Yuma Resource Area Office**
3150 Winsor Avenue
Yuma, Arizona 85365
602-726-6300

U.S. BUREAU OF RECLAMATION

☐ **Arizona Projects Office**
P.O. Box 9980
Phoenix, Arizona 85068
602-870-6766

NATIONAL PARK SERVICE

☐ **Western Archeological and Conservation Center**
P.O. Box 41058
Tucson, Arizona 85717
602-670-6477
See parks and monuments under Museums and Places to Visit

U.S. FOREST SERVICE

☐ **Apache-Sitgreaves National Forest**
P.O. Box 640
Springerville, Arizona 85938
602-333-4301

☐ **Coconino National Forest**
2323 E. Greenlaw Lane
Flagstaff, Arizona 86001
602-527-7431 or 602-527-7410

☐ **Coronado National Forest**
Federal Building
300 W. Congress FB42
Tucson, Arizona 85701
602-670-4552

☐ **Kaibab National Forest**
800 S. 6th Street
Williams, Arizona 86046
602-635-2681

☐ **Prescott National Forest**
344 S. Cortez St.
Prescott, Arizona 86301
602-445-1762

☐ **Tonto National Forest**
P.O. Box 5348
Phoenix, Arizona 85010-5348
602-225-5231

INDIAN TRIBES

☐ **Ak-Chin Indian Community**
42507 W. Peters and Nall Road
Maricopa, Arizona 85239
602-568-2628
602-254-6133 FAX
Events open to the public:
Ak-Chin Annual Election Barbecue, January *602-568-2227*
Ak-Chin St. Francis Church Feast Honoring Past Chair's Day, October *602-568-2227*
4th of July Fireworks Picnic, July 4 *602-568-2258*

☐ **Camp Verde Yavapai-Apache Indian Community**
P.O. Box 1188
Camp Verde, Arizona 86322
602-567-3649
602-567-9455 FAX
Events open to the public:
Camp Verde Exodus Days and Tribal Pageant, Last Saturday in February, *602-567-6685*

☐ **Cocopah Tribe**
P.O. Bin "G"
Somerton, Arizona 85350
602-627-2102 or *602-627-2061*
627-3173 FAX
Events open to the public:
Cocopah Annual Festivity Days, March (East Reservation) *602-627-2101*
Miss Cocopah Pageant, March (East Reservation) *602-627-2101*
Cocopah Land Acquisition Day (West Reservation) *602-627-2101*

☐ **Colorado River Indian Tribes**
Route 1, Box 23-B
Parker, Arizona 85344
602-669-9211
602-669-5675 FAX
Events open to the public:
Colorado River, July 4th, Manataba Park *602-669-9211*

Colorado River All-Indian Rodeo, December, Rodeo Grounds *602-669-2293*
National Indian Days, Last weekend, September *602-669-9211*

☐ **Fort McDowell Mohave-Apache Indian Community**
P.O. Box 17779
Fountain Hills, Arizona 85269
602-990-0995
602-837-1630 FAX
Events open to the public:
Fort McDowell Victory Celebration, November, Fort McDowell Res. *602-990-0995*

☐ **Fort Mojave Indian Tribe**
500 Merriman Avenue
Needles, California 92363
619-326-4591
619-326-2468 FAX
Events open to the public:
Fort Mojave Days, October *619-326-4591*

☐ **Fort Yuma Quechan Tribe**
P.O. Box 11352
Yuma, Arizona 85366-9352
619-572-0213
629-572-2102 FAX

Events open to the public:
Fort Yuma Quechan 4th of July *(619-572-0213)*
Fort Yuma Indian Day Celebration, last weekend in September *(619-572-0213)*
San Pasqual High School Pow Wow, first weekend in March *(619-572-0222)*

☐ **Gila River Indian Community**
P.O. Box 97
Sacaton, Arizona 85247
602-562-3311 (Phoenix local *963-4323*)
602-562-3422 FAX
Events open to the public:
Gila River Pima-Maricopa Arts Festival, November, Arts and Crafts Center *602-963-4323*
Gila River Arts and Crafts Native American Dance Festival, November, Arts and Crafts Center *602-963-4323*
Gila River St. John's Mission Festival, first Sunday in March, St. John's Indian School, Laveen *602-237-2400*
Gila River Annual Mul-Chu-Tha and All Indian Rodeo, second weekend in April, Sacaton
602-963-4323

☐ **Havasupai Tribe**
P.O. Box 10
Supai, Arizona 86435
602-448-2731 or 602-448-2961
Events open to the public:
Havasupai Peach Festival, August *602-448-2961*
Health Fair, March *602-448-2641*
Indian Day, September *602-448-2901*
Land Day, January *602-4448-2731*

☐ **Hopi Tribe**
P.O. Box 123
Kykotsmovi, Arizona 86039
602-734-2441
602-734-6665 FAX
Cultural Preservation Office 602-734-2441, *extension 204*
Events open to the public:
Hopi Social Dances: Special events are announced two to three weeks prior to event. No set schedule available. *602-734-2441.*

☐ **Hualapai Tribe**
P.O. Box 179
Peach Springs, Arizona 86434-0179
602-769-2216
602-769-2343 FAX

Events open to the public:
Hualapai Sobriety Festival, May, Peach Springs *602-769-2216*
Hualapai Pageant, July, Peach Springs *602-769-2216*
Hualapai Art Festival, July, Peach Springs *602-769-2216*
Indian Day, September, Peach Springs *602-769-2216*

☐ **Kaibab Paiute Tribe**
HC 65 Box 2
Fredonia, Arizona 86022
602-643-7245
602-643-7248 FAX

☐ **Navajo Nation**
P.O. Box 308
Window Rock, Arizona 86515
602-871-6352
602-871-5704 FAX
Historic Preservation
Division of Natural Resources
602-871-6437

Events open to the public:
Central Navajo Fair, end of August/beginning of September *602-674-5877*
Annual Navajo Nation Fair and Rodeo/Pow Wow, September, Window Rock *602-871-6702*
Navajo Nation Fair Pedal Power, September, Fort Defiance *505-371-5408*

☐ **Pascua Yaqui Tribe**
7474 S. Camino De Oeste
Tucson, Arizona 85746
602-883-2838
602-883-7770 FAX
Events open to the public:
Pascua Yaqui Easter Ceremonies, Easter Week, Tucson *602-883-2838*
Tribal Recognition Day, September *602-883-2838*

☐ **Salt River Pima-Maricopa Indian Community**
Route 1, Box 216
Scottsdale, Arizona 85256
602-941-7277
602-949-2909 FAX
Events open to the public:
Miss Salt River Pageant, Veteran's Day Weekend, November *602-941-7277*
Annual Senior Citizen's Bazaar, May *602-941-7225*

☐ **San Carlos Apache Tribe**
P.O. Box O
San Carlos, Arizona 85550
602-475-2361
602-475-2567 FAX

Events open to the public:
San Carlos Spring Rodeo, April, Peridot *602-475-2307*
Veteran's Day Fair/Rodeo, November, San Carlos *602-475-2307*
Bylas Rodeo, April, Bylas *602-475-2307*

☐ **San Juan Southern Paiute Tribe**
P.O. Box 2656
Tuba City, Arizona 86045
602-283-4587 or 602-283-4583
602-283-5761 FAX
Events open to the public:
San Juan Southern Paiute Pow Wow, third weekend June, Hidden Springs *602-283-4583*

☐ **Tohono O'odham Nation**
P.O. Box 837
Sells, Arizona 85634
602-383-2221, ext. 285
602-383-3379 FAX
Events open to the public:
Tohono O'odham Rodeo and Fair, October, Sells *602-383-2221*
Tohono O'odham San Xavier Indian Arts and Crafts Market, weekends, San Xavier Mission *602-294-5727*
Tohono O'odham Tash Indian Rodeo Fair, February, Casa Grande *602-836-4723*
San Xavier Pageant and Fiesta, April, San Xavier *602-622-6911*

☐ **Tonto Apache Tribe**
Tonto Apache Reservation #30
Payson, Arizona 85541
602-474-5000
602-474-9125 FAX
Events open to the public:
Tonto Apache July 4th Celebration, Payson *602-474-5000*

☐ **White Mountain Apache Tribe**
P.O. Box 700
Whiteriver, Arizona 85941
602-338-4346
602-338-4778 FAX
Events open to the public:
White Mountain Apache Fair and Rodeo, end of August, beginning of September, Whiteriver *602-338-4346*
White Mountain Sunrise Ceremonies, various weekends *602-338-4346*

☐ **Yavapai-Prescott Indian Tribe**
530 E. Merritt
Prescott, Arizona 86301-2038
602-445-8790
602-778-9445 FAX
Events open to the public:
Yavapai-Prescott All Indian Pow-Wow, June, Prescott *602-445-8790*

OTHER EVENTS:
Native American Recognition Week, September, Phoenix *602-258-1260*
Scottsdale All Indian Days Pow-Wow and Indian Market, March, Scottsdale *602-946-4228*

SUGGESTED READING

FICTION

☐ **Bandelier, Adolf E.**
1971 *The Delight Makers.* Harcourt Brace Jovanovich, New York.
An interesting attempt by one of the Southwest's first archaeologists to recreate the culture of the late prehistoric Rio Grande peoples. Style is nineteenth-century, but the book is very readable and the reconstruction is fairly accurate even in terms of more recent research. Strong upper-level elementary readers and above.

☐ **Clark, Ann Nolan**
1988 *Little Herder in Autumn.* Ancient City Press, Santa Fe.
Written in English and Navajo we follow the life of a young Indian girl and her family and their everyday life. Primary to elementary level.

☐ **Cohen, Caron Lee**
1988 *The Mud Pony.* Scholastic Inc., New York.
A young Indian boy dreamed for a pony more than anything else, and he made a horse out of mud. As this folktale unwinds it will take you into his moving adventure. Primary and elementary level.

☐ **Grammer, Maurine**
1991 *The Bear That Turned White: And Other Native Tales.* Northland Publishing.
The stories were told to the author personally by Native American friends. They are a bridge between cultures, as well as a source of enjoyment. Good bedtime stories, too. Elementary level.

☐ **Green, Timothy**
1991 *Mystery of Navajo Moon.* Northland Publishing.
Imagine how surprised Wilma was one windy, full-moon night when a silvery steed appeared at her window and carried her on a magical ride to the stars! Had Wilma been dreaming or did she really grab a moonfiake from the sky? Primary to elementary level.

☐ **Hillerman, Tony**
1973 *Dance Hall of the Dead.* Avon Books, New York.
1988 *A Thief of Time.* Harper & Row, New York.
1989 *Talking God.* Harper & Row, New York.
These and other Hillerman mysteries make for exciting reading that can be used for good discussions. *Dance Hall of the Dead* addresses the issue of faking artifacts, *A Thief of Time* takes on the issue of pothunting, and *Talking God* gets right to the point on the currently sensitive issue of Indian burial objects and repatriation. Up-

per-level elementary readers and above.

☐ **Hobbs, Ida May**
1987 *The Coming of Gray Owl.* Mesa Verde Museum Association.
As you read this book you will discover the magic of Mesa Verde. Share in the wonder as two very different people develop a friendship that bridges their dissimilar cultures. Primary to upper elementary level.

☐ **Keegan Marcia**
1991 *Pueblo Boy: Growing Up in Two Worlds.* Cobblehill Books, New York.
A ten year old's life is filled with many activities learning the traditions of his people and the culture of the twentieth-century society. Upper elementary through junior high.

☐ **Kennard, Edward A.**
1977 *Field Mouse Goes to War.* The Filter Press.
Written in English with Hopi parallel text. This story about a hawk and a mouse keeps the reader on the edge until the very end. Primary to early elementary.

☐ **Lavitt, Edward and Robert E. McDowell**
1990 *Ninhancan's Feast of Beaver.* Museum of New Mexico Press.
Tales of the North American Indians drawn from nine culture areas, that entertain and teach "how to live a good life among one's own people". Elementary to junior high.

☐ **LeGuinn, Ursula K.**
1987 *Always Coming Home.* Bantam Books, New York.
Anthropological, rather than archaeological, this book tells a tale of two cultures through the eyes of a girl with ties to both groups. Includes poems, legends, and art. The original edition (Harper and Row 1985) included a cassette with music of the cultures. Good for discussion of culture contact and change. Upper elementary +.

☐ **Lopez, Barry**
1990 *Crow and Weasel.* North Point Press.
In a distant era of myth time, when people and animals still spoke the same language, the Crow and Weasel meet with terrifying danger and spectacular beauty. Elementary to junior high.

☐ **Lowell, Susan and Jim Harris**
1992 *The Three Little Javelinas.* Northland Press.
These lovable, wild southwestern cousins of the pigs try to outsmart the coyote, who hopes to eat them with red chili sauce. Sure to delight children of all ages. Primary to elementary level.

☐ **Macaulay, David**
1979 *Motel of the Mysteries.* Houghton Mifflin, Boston.

A great spoof on the discoveries at Mycenae and of King Tut's tomb, this book can be used to teach about archaeological interpretation.

☐ **Malotki, Ekkehart**
1992 *The Mouse Couple: A Hopi Folktale.* Northland Publishing.
Retold by- A delightful tale of the search for happiness, wherein a mouse meets the Sun, Clouds, Wind, and Butte, only to discover that what he seeks is right at home. Primary to elementary level.

☐ **Trimble, Stephen**
1990 *The Village of Blue Stone.* Macmillan Publishing Company.
Two cowboys looking for cattle in 1888 looked over a ledge and discovered Cliff Palace and you can discover with them the exciting things they found. Upper elementary to junior high.

☐ **Vick, Helen H.**
1993 *Walker of Time.* Harbinger House, Tucson.
A Hopi boy and his friend, the son of an archaeologist, travel back in time to a prehistoric village in Walnut Canyon. Upper-level elementary readers and above.

NONFICTION

☐ **Asch, Connie**
1989 *Indian Dancers Coloring Book.* Treasure Chest.
A color-by-number book of the many Indian dancers of the southwest area. Preschool - 1st grade.

1989 *Kachina Coloring Book.* Treasure Chest Publications.
A color-by-number book of Hopi Kachinas. Preschool to primary.

☐ **Armento, Beverly J., Gary B. Nash, Christopher L. Salter, Karen K. Wixson**
1991 *A Message of Ancient Days.* Houghton Mifflin Social Studies, Houghton Mifflin, Boston.
Sixth-grade level social studies text that explores concepts about archaeology and history and how those concepts can be used to examine current issues.

☐ **Ayer, Eleanor H.**
1993 *The Anasazi.* Walker and Company, New York.
Tracing the Anasazi's roots as you trace the rise and fall of their society. Learn about their daily life and rituals. Upper elementary and junior high.

☐ **Baldwin, Gordon**
1965 *The Riddle of the Past: How Archaeological Detectives Solve Prehistoric Puzzles.* Norton, New York.

Explains the skills and techniques of archaeological fieldwork and laboratory work that were used in 1965. Tells how amateurs can work with professional archaeologists.

1967 *Calendars to the Past: How Science Dates Archaeological Ruins.* Norton, New York.
Discusses in understandable terms how information from geology, astronomy, physics, and other sciences can be used to determine the age of archaeological remains.

☐ **Barna, Carl, Richard Brook, Shelly Fischman, Shelley Smith, and Mary Tisdale**
1993 A Golden Opportunity for Science. *Science and Children* February.
This article describes the history of gold mining, with suggested classroom activities. Maps, photographs, and illustrations accompany the article.

☐ **Barrett, Katharine, Lincoln Bergman, Gigi Dornfest, Linda Lipner, and Carolyn Willard**
1992 *Investigating Artifacts: Making Masks, Creating Myths, Exploring Middens.* GEMS guide, Lawrence Hall of Science (LHS), University of California, Berkeley.
For K-6, includes instructions and background information for the topics listed; shows how these anthropological themes can be used to teach various skills, concepts, science and mathematics.

☐ **Barry, Iris**
1981 *Discovering Archaeology.* Stonehenge Press, London. Printed in U.S. by Rand McNally.
Broad overview of archaeology discussing excavation, preservation, dating methods, historical archaeology, the future of archaeology, and interpretation of artifacts, among other things. Sites from all over the world are considered.

☐ **Bartlett, Michael H., Thomas M. Kolaz, and David A. Gregory**
1986 *Archaeology in the City: A Hohokam Village in Phoenix, Arizona.* University of Arizona Press, Tucson.
Book written for the lay person about the prehistory and archaeology of the Hohokam site of Las Colinas in Phoenix.

☐ **Batherman, Muriel**
1981 *Before Columbus.* Boston, Houghton Mifflin.
Summarizes Paleo-Indian and Anasazi (Basketmaker and Pueblo) cultures. Oversimplification, but provides a reasonable introduction to Anasazi archaeology. 2d through 4th grade.

☐ **Bolton, Herbert E.**
1949 *Coronado; Knight of Pueblos and Plains.*
A Classic on the topic of Coronado's expedition. Carefully researched and easy to read. Strong elementary school readers and above.

1984 *Rim of Christendom.* Tucson, University of Arizona Press. Originally published in 1939.
A classic study of Father Kino, provides a good introduction to Spanish colonial Arizona. Strong elementary readers and above.

☐ **Brandenberg, Aliki**
1976 *Corn Is Maize: The Gift of the Indians.* New York, Harper Collins.
Simple story of the domestication of corn. Illustrations are interesting. Good read-aloud book. 2d through 4th grade.

☐ **Cassells, E. Steve**
1988 *The Archaeology of Colorado.* Johnson Publishing Co.

A very complete source on the prehistory of what is now Colorado. Included are environment, dating techniques, and the variety of Indian tribes that have lived in Colorado, terminology, a glossary and sketches of prominent Colorado archaeological sites. High school.

☐ **Casson, Lionel, Robert Claiborne, Brian Fagan, and Walter Karp**

1977 *Mysteries of the Past.* American Heritage, New York.
Chapters cover a wide range of topics, from Mound Builders, to early contact in the New World, to the origins of the Indo-Europeans. Good presentations of the data behind the "mysteries." For strong upper-level elementary readers and above.

☐ **Cordell, Linda S. and George J. Gumerman**
1981 *Archaeological Method and Theory: Volume 3.* Arizona Press.
The authors provide you a synthetic overview, but also includes particular case studies. The first two articles examine evolutionary approaches to archaeological data from different perspectives. Computer technologies with archaeological findings are pursued in the final chapter as means to provide archaeologists for modeling human behavior. College.

☐ **Cordell, Linda S.**
1984 *Prehistory of the Southwest.* Academic Press, Orlando.
A good, if somewhat technical, overview of the current views on Southwestern prehistory. Terms and concepts are explained; reading level is high school and above.

☐ **Cork, Barbara and Struan Reid**
1989 *The Usborne Young Scientist: Archaeology.* EDC Publishing.
Exciting archaeological topics and concepts are explained in a clear visual style, with straight-forward text. Safe, simple projects reinforce understanding. Upper elementary to junior high grade.

☐ **Coy, Harold**
1973 *Man Comes to America.* Little, Brown, Boston.
Discusses the various theories of early human arrival in the Americas, settlement, and means of survival. General overview of North American prehistory and good suggestions for further reading. Dates and some concepts may be outdated.

☐ **Daniels , Steve and Nicholas David**
1992 *The Archaeology Workbook.* University of Pennsylvania Press.
This workbook fills a significant gap in the training of archaeologists by supplying a set of inventive, often witty, fictionalized problems in archaeological research. Following a preface for instructors and an introduction offering students some basic concepts and practical advice, thirteen problems are presented as a suite of exercises geared to a semester's length. May be used by itself or in conjunction with any standard textbook to enhance archaeology courses. High school through college.

☐ **D'Azevedo, Warren L. (editor)**
1986 *Handbook of North American Indians-Great Basin-Volume 11.* Smithsonian Institution Press.
A reference book on prehistory, history, and cultures of the Great Basin Area, covering it in an encyclopedic summary. An excellent technical reference. College.

☐ **Deetz, James**
1967 *Invitation to Archaeology.* Natural History Press, New York.
Scholarly but readable review of archaeology. Includes some advanced concepts that archaeologists use in writing research designs and in artifact analysis. General reference.

1977 *In Small Things Forgotten. The Archaeology of Early American Life.* Anchor Press/Doubleday, New York.
Scholarly but readable work on historical archaeology. Has some excellent examples of historical archaeological excavations and projects. Demonstrates the difference between prehistoric and historic archaeology. General reference, although some descriptions of excavations and projects could be copied for class handouts for upper elementary classes and older or could be read aloud.

☐ **Doherty, Craig A. and Katherine M. Doherty**
1991 *The Apaches and Navajos.* Franklin Watts, New York.
The histories of the life, customs, and art of of these facinating Indian tribes. Upper elementary and junior high.

☐ **Dozier, Edward P.**
1970 *The Pueblo Indians of North America.* Waveland Press, Prospect Heights, Ill.
Scholarly but readable description of the Pueblo peoples in northern Arizona and New Mexico written by a Santa Clara Pueblo Indian turned anthropologist. Includes information on pueblo prehistory and history. Good for reference and high level high school.

☐ **Downs, James F.**
1972 *The Navajo. Case Studies in Cultural Anthropology.* Holt, Rinehart, and Winston, New York.
A detailed but concise description of the Navajo, including information on their history and prehistory. Good for reference and high level high school.

☐ **Duke, Philip and Gary Matlock**
1992 *The State of Colorado Archaeology.* Colorado Archaeological Society.
Presenting a current synopsis on Colorado archaeology, including history, theory, and governmental involvement in Colorado archaeology. College.

☐ **English, Sandal**
1981 *Fruits of the Desert.* Arizona Daily Star, Tucson.
Descriptions of and ways to use fruits and nuts of the Sonoran Desert. Also includes information on the various foods. Not as authentic as C. Niethammer's book, but recipes are more familiar to American tastes.

☐ **Fagan, Brian M.**
1978 *In the Beginning: An Introduction to Archaeology.* Little, Brown, Boston.
This excellent overview of the field of archaeology is easy to read. Reading level is high school and above.

1985 *The Adventure of Archaeology.* National Geographic Society, Washington,D.C.
Good, exciting story of the history of archaeology throughout the world. Reading level is high school and above, but sections make good "read-aloud" material for lower grades.

☐ **Ferguson, William M. and Arthur H. Rohn**
1990 *Anasazi Ruins of the Southwest in Color.* University of New Mexico Press.
A lavishly illustrated look at the Anasazi ruins of the Four Corners area. Technical information, including maps, fioor plans and illustrations. Excellent history book on the southwest area. High school.

☐ **Freeman, Brian and Jodi**
1987 *The Old Ones.* The Think Shop.
Topics of everyday life of the Anasazi, their homes and family life are explained in this well written book with plenty of drawings. Primary through elementary.

1990 *My Coloring Book About the Old Ones.* The Think Shop.
A great activity book to correspond with *The Old Ones* text book. Preschool to primary level.

☐ **Folsom, Frank**
1966 *Science and the Secret of Man's Past.* Harvey House, Irvington-on-Hudson, New York.

Charts how the development of archaeology has been influenced by scientific discoveries made over the past 300 years. Tells how the work of many scholars has made it possible to date archaeological remains.

1983 *America's Ancient Treasures.* 3d edition. University of New Mexico Press, Albuquerque.
Profiles nearly 400 archaeological sites and numerous museums that are open to the public. Gives a good general introduction to the prehistory and archaeology of the United States and Canada.

☐ **Freeman, Mae Blacker**
1967 *Finding Out About the Past.* Random House, New York.
An introduction to the science of archaeology for beginning readers.

☐ **Gibson, Michael**
1980 *A New Look at Treasures of Archaeology.* Arco, New York.
Traces the development of archaeology. Text is interspersed with activities for children.

☐ **Gregonis, Linda M., and Lee Fratt**
1992 *Archaeology: Window on the Past.* Available from Tucson Unified School District, Camp Cooper, P.O. Box 40400, Tucson, Arizona 85717. 602-743-7422.
Manual includes basics of archaeology, overview of Arizona prehistory with emphasis on Hohokam, activities, glossary, and reading list. Text written for upper-level elementary.

☐ **Gregonis, Linda M., and Karl J. Reinhard**
1979 *Hohokam Indians of the Tucson Basin.* University of Arizona Press, Tucson.
A concise look at the prehistory and lifeway of the Hohokam. Designed for readers 6th grade and up.

☐ **Grimm, William C.**
1973 *Indian Harvests.* McGraw-Hill, New York.
Describes the ways Indians used many native plants, including cattails and milkweed.

☐ **Groneman, Barbara**
forthcoming
The Hohokam Arts and Crafts Activity Book. Southwestern Learning Sources, 6440 East Presidio, Scottsdale, Arizona 85254 *602-991-0341*

☐ **Houk, Rose**
1987 *Casa Grande Ruins National Monument.* Southwest Parks and Monuments Association, Tucson.
Written for the layperson, this book contains lively descriptions of the prehistory and archaeology of the Hohokam site of Casa Grande, near Coolidge, Arizona.

1992 *Anasazi.* Southwest Parks and Monuments Association, Tucson.

1992 *Hohokam.* Southwest Parks and Monuments Association, Tucson.

1992 *Sinagua.* Southwest Parks and Monuments Association, Tucson.

1992 *Mogollon.* Southwest Parks and Monuments Association, Tucson.

1992 *Salado.* Southwest Parks and Monuments Association, Tucson.

A series of 15-page booklets, designed for lay visitors to national parks and monuments in the Southwest. Clearly written, each contains a summary of the major prehistoric ceramic cultures in this area.

☐ **Iverson, Peter**
1990 *The Navajos.* Chelsea House Publishers.
Three authorities who are themselves American Indians, present to young adults for the first time the significant place that American Indians have had in our society. This is a perfect book to teach the significance the Navajo people have in today's society. Upper level elementary to High school.

☐ **Jennings, Jesse D.** (editor)
1978 *Ancient Native Americans,* W. H. Freeman, San Francisco.
A scholarly but readable book. Contains good, detailed summaries of major archaeological groups and time periods.

☐ **Kelly, Lawrence C.**
1990 *Federal Indian Policy.* Chelsea House Publishers.
This volume in the "Indians of North America" series is written specifically for young adults. Exploring the policies that have determined the course of relations between Indians and non-Indians in the U.S. for two centuries. High school to college.

☐ **Lattimore, Deborah Nourse**
n.d. *Digging Into the Past.* Brainboosters, Educational Insights, Dominguez Hills, California.
Good activity-center book, uses hand-held "decoder" to provide answers to puzzles and logic problems. Mostly Old World archaeology presented. Upper-level elementary through junior-high.

☐ **Lipe, W.D. and Michelle Hegmon**
1989 *The Architecture of Social Integration in Prehistoric Pueblos.* Crow Canyon Archaeological Center.
This explicit publication explains how architecture served to integrate the Anasazi society. It pursues the ritual and non ritual activities in the Mesa Verde region, ceramics and ceremonials, kivas, and styles of integration. College.

☐ **Liptak, Karen**
1990 *North American Indian Medicine People.* Franklin Watts, New York.
North American Indian medicine men and women and the roles they play healing the sick, helping tribal members and controling the weather. Middle school through High school.

1990 *North American Indian Sign Language.* Franklin Watts, New York.
A very special sign language book based on the language of the American Indians of the Great Plains. Upper elementary to High school.

☐ **Lucias, William A. and David A. Breternitz**
1992 *Northern Anasazi Ceramic Styles: A Field Guide for Identification.*
Center for Indigenous Studies in the Americas Publications in Anthro. No. 1.
An excellent reference guide for identifing pottery types. High school to college.

☐ **Lister, Robert H., and Florence C.**
1983 *Those Who Came Before: Southwestern Archaeology and the National Park Service.* University of Arizona Press, Tucson.
For the layperson, history of archaeology in the Southwest. Contains excellent illustrations, graphics, and biographies.

☐ **Lucias, William A. and David A. Breternitz**
1992 *Northern Anasazi Ceramic Styles: A Field Guide for Identification.*
Center for Indigenous Studies in the Americas Publications in Anthro. No. 1.
An excellent reference guide for identifing pottery types. High school to college.

☐ **Lyttle, Richard B.**
1980 *People of the Dawn.* Antheneum, New York.
Traces the history of people in the New World through descriptions of important archaeological discoveries.

☐ **McIntosh, Jane**
1986 *The Practical Archaeologist: How We Know What We Know About The Past.*
Facts on File.
A key reference to the world of modern archaeology, explaining in detail just how we know what we know about the past. How sites develop, choosing sites, tools, recording the finds, conservation and analysis, the importance of dating, use of computers, experiments in reconstruction, and so much more. More than 220 illustrations. High school.

☐ **McNutt, Nan**
1988 *P.A.S.T.: Project Archaeology: Saving Traditions.* Sopris West, Longmont, Colorado.
A good teacher's guide, designed for middle school curriculum, but can be adapted for other grades. Interdisciplinary and flexible, entire curriculum is approximately 70 hours.

☐ **Marshall, Michael P. & Patrick Hogan**
1991 *Rethinking Navajo Pueblitos.* New Mexico Bureau of Land Management, Cultural Resource Series No. 8.
Research of the stone towers of Dinetah site in New Mexico. Rewiews the archaeology and the evidence supporting the intensive Navajo and Pueblo interaction. College.

☐ **Martinez, Maria**
1992 *Pueblo Potter.* Childrens Press, Chicago.
The art of pottery making comes alive with the training from her family. Maria begins her journey through life bringing pots alive. Elementary through junior high.

☐ **Matson, R.G.**
1991 *The Origins of Southwest Agriculture.* University of Arizona Press.
Discussing the early agricultural and archaic cultures in the greater Southwest, the evolution of maize use, and the differences between the Colorado Plateau and the Basin and Range physiographic provinces. College.

☐ **Meltzer, David J. , Don D. Fowler and Jeremy A. Sabloff**
1986 *American Archaeology Past and Future: A Celebration of the Society for American Archaeology 1935-1985.* Smithsonian Press.
This book examines the contributions of recent research on three areas of enduring concern: hunter/gatherer archaeology, domestication, and food production, and the evolution of complex societies. The final section of the book offers a view of current themes and methods and a discussion of the potential of cultural resource management with views on the epistemological foundation of contemporary archaeology. Together this volume testifies to the amount of hard work yet to be done. College.

☐ **Miller, Jeanne**
The Hohokam, An Independent Study.
The Anasazi, An Independent Study.
The Mogollon, An Independent Study.
Perfectly Preserved
Pottery Designs
Prehistoric Rock Art
Thinking Like an Archaeologist
Thinking Caps, Inc. P.O. Box 26239, Phoenix 85068 *602-870-1527.*
A module designed for honing critical and higher-level thinking skills. Middle school through high school.

☐ **Nabhan, Gary Paul**
1985 *Gathering the Desert.* University of Arizona Press, Tucson.
1987 *The Desert Smells Like Rain: A Naturalist in Papago Indian Country.* North Point Press.
Lively, personal descriptions of Papago country and how Papagos use the desert. Nabhan's style is enjoyable, would work well in "read-aloud" situations.

☐ **National Geographic Society**
1976 *Clues to America's Past.* National Geographic Society, Washington, D.C.
Tells about American archaeology through stories about excavations at various sites. Chapter 3, "From the Words of the Living: The Indian Speaks," describes Indians at the time Europeans arrived, based on eyewitness accounts. Much of this chapter is about the lower Mississippi Valley.

☐ **Nelson, Lisa**
1990 *Ice Age Mammals of the Colorado Plateau.* Northern Arizona University, P.O. Box 4085, Flagstaff Arizona 86011-4085. Also available through National Park Service Bookstores.
24-page booklet includes brief descriptions of the major Pleistocene mammals (including humans) that lived on the Colorado Plateau. Well-illustrated.

☐ **Niethammer, Carolyn**
1974 *American Indian Food and Lore.* Macmillan, New York.
A good summary source of information on how American Indians, especially those in the Southwest, use various wild and domestic plants. Recipes included are easy to follow. (The challenge is in finding the food!)

☐ **Noble, David Grant**, editor
1991 *The Hohokam: Ancient People of the Desert.* School of American Research, Santa Fe.
Contains seven scholarly but nontechnical articles on various aspects of Hohokam archaeology, including use of plants, craft arts, religion, and rock art.

☐ **Ortiz, Alfonso (editor)**
1979 *Handbook of North American Indians-Southwest - Volume 9.* Smithsonian Institution Press.
This volume contains an encyclopedic summary of what is known about the prehistory, general history and languages of the Southwest, and the cultures and histories of the Pueblo peoples. College.

1983 *Handbook of North American Indians - Southwest, Volume 10.* Smithsonian Institution Press.
This volume covers the cultures, histories, and languages of the non-Pueblo peoples of the Southwest, the groups sometimes referred to as Circum-Pueblo, and those on the northern fringe of Mesoamerican. College.

1992 *The Pueblo.* Chelsea House Publishers.
The Pueblo (the Spanish word for village) housed the Indian people from Arizona to New Mexico. More than any other Indian people, the Pueblo have succeeded in maintaining the essence of their traditional identity. High school to college.

☐ **Pike, Donald G.**
1974 *Anasazi: Ancient People of the Rock.* American West, Palo Alto, California.
Good coffee-table style book on the Anasazi with a brief look at "related" cultures including the Sinagua, Salado, and by association, the Hohokam. Excellent photos by David Muench.

☐ **Pinney, Roy**
1970 *Underwater Archaeology: Treasures Beneath the Sea.* Hawthorn Books, New York.
Tells about interesting underwater sites, the history of diving, the technology of underwater archaeology, and the training of underwater archaeologists. Of local interest is the chapter on American history underwater.

☐ **Powers, Margaret A. and Byron P. Johnson**
1987 *Defensive Sites of Dinetah.* New Mexico BLM, Cultural Resource Series No. 2.
Early phases in Navajo occupation with cultural overviews and archaeological research in refugee devensive sites. College.

☐ **Schiffer, Michael B. (editor)**
1989 *Dynamics of Southwest Prehistory.* Smithsonian Press.
Focusing on the southwest prehistory, including the Hohokam, Anasazi and Mogollon regions. The authors investigate the population dynamics and sedentism; functional and organizational significance of large sites; and the main causes of cultural change whether or not related to environmental factors. College.

☐ **Slapin, Beverly and Doris Seale (editors)**
1992 *Through Indian Eyes: The Native Experience in Books for Children.* New Society Publishers, Philadelphia.
Peotry, personal recollection, and book reviews from a Native perspective help you to understand subtle stereotypes and mythology that is in Native Americans children's literature. High school to adults.

☐ **Sale, Kirkpatrick**
1990 *The Conquest of Paradise: Christopher Columbus and the Columbian Legacy.* Alfred A. Knopf, New York.
Good, readable account of the impact of Columbus's voyages. Discusses the ecological as well as historical impacts.

☐ **Salts, Bobbi**
1991 *Southwestern American Indian Discovery.* American Educational Press, in association with the Heard Museum, Phoenix.
Coloring-book style guide, contains activities and one-page descriptions of past and present Arizona Indian groups.

☐ **Sherratt, Andrew**
1980 *The Cambridge Encyclopedia of Archaeology.* Crown, New York.

Comprehensive volume. Good for general perusal and short research papers. Scholarly, but accessible, written in British style.

☐ **Smith, Anne M.**
1974 *Ethnography of the Northern Utes* - Papers in Anthropology No. 17. Museum of New Mexico Press.
Comprehensive study of the Ute tribe and how they lived and what their way of life was in great detail. Excellent history book. College.

☐ **Smithsonian**
1988 *Handbook of North American Indians - History of Indian / White Relations - Volume 4.* Smithsonian Press.
This publication is planned to give an encyclopedic summary of what is known about prehistory, history and cultures of the aboriginal peoples of North America who live north of the urban civilizations of central Mexico. College.

☐ **Snow, Dean**
1976 *The Archaeology of North America.* Viking Press, New York.
Scholarly, but presents archaeology in a more romantic light than most scholarly books. Interesting illustrations.

☐ **Southern Ute Tribe**
1989 *Ute Legacy Packet.* Southern Ute Tribe.
This total teaching kit including a study guide, 17 minute video, narration booklet and accompanied books:*Explorations in Southern Ute History ,The Southern Utes: A Tribal History*. Lesson plans and field trip ideas are only a part of this package. Upper elementary to high school level.

☐ **Spicer, Edward**
1962 *Cycles of Conquest.* University of Arizona Press, Tucson.
Good discussion of how the Pima, Papago, Yaqui, and Western Apache were changed by contact with Spaniards, Mexicans, and Americans. Fairly technical.

☐ **Stark, Rebecca**
1986 *Archaeology.* Archaeology Kits.
Mythology, Archaeology, Architecture
Egyptians, Maya, Minoans.
The Learning Works, Inc. Santa Barbara, California.

☐ **Tanner, Clara Lee**
1976 *Prehistoric Southwestern Craft Arts.* University of Arizona Press, Tucson.
Comprehensive, non-technical overview of arts and crafts of prehistoric Southwesterners. Well illustrated, good reference source.

☐ **Time-Life Books**
1987 *TimeFrame* Series. Time-Life Books, Alexandria, Virginia.

These books present histories of events throughout the world for various time periods. For example, *Empires Ascendant: TimeFrame 400 BC–AD200,* contains chapters on Alexander the Great, Imperial Rome, the opulence of East Indian cultures, the Silk Road, and the rise of cultures in China. *Barbarian Tides: TimeFrame 1500–600 B.C.* discusses the Hittites, Egypt's golden age, the rise of Greece as a power, trade in the Mediterranean, the Aryan civilization in India, and the Olmec culture in Mexico. The chapters are well-written, thought provoking, and well-illustrated. Few of the books contain information on the Americas, however. For strong upper-level elementary readers through high school.

1992–1993 *The American Indians* Series. Time-Life Books, Alexandria, Virginia. A new series being published by Time-Life, each book contains a comprehensive overview of a time period, region, or topic. *The First Americans* deals primarily with the prehistory of North America and focuses on the Paleo-Indians, the Southwest, Southeast, and Northwest Coast; *The Spirit World* discusses Indian religion; *People of the Desert* describes the native peoples of the U.S. Southwest and northern Mexico; and *The European Challenge* is a book about the contact period. All are well-illustrated and informative.

☐ **Tisdale, Mary, Richard Brook, and Carl Barna**
1992 Science in Process: Discovering the Past at Santa Cruz. *Science and Children* April.
This article describes the history of Santa Cruz de Terrenate, a Spanish presidio in southeastern Arizona, and explains how archaeologists and historians have investigated the site. A foldout invites one to "solve the mystery of Santa Cruz."

☐ **Tisdale, Mary and Richard Brook**
1993 Mystery of the Mesa: A Science Detective Story. *Science and Children* October. This article describes the paleo-indian finds at Alaska's Mesa Site and the questions of how early people first came to the Americas.

☐ **Udall, Stuart**
1987 *To the Inland Empire.* Doubleday, New York.
Coffee-table style book tracing probable route of Coronado's journey through Arizona and New Mexico.

☐ **Warren, Scott**
1992 *Cities in the Sand: The Ancient Civilizations of the Southwest.* Chronicle Books, San Francisco.
Well-illustrated, easy-to-read summaries of prehistoric southwestern cultures. For 2d to 4th grade reading levels.

☐ **Wesche, Alice**
1977 *Wild Brothers of the Indians.* Treasure Chest, Tucson.
Coloring-book style. Theme is Indians' concept of animals. Illustrations from North

and South America, but emphasis is on Mimbres culture depictions of animals and people. Shows how to draw various figures. Upper-level elementary.

☐ **Wheat, Pam and Brenda Whorton**
1990 *Clues from the Past: A Resource Book on Archeology.* Texas Archeological Society.
A step-by-step approach to history using the format of an archaeological investigation. A unique section portrays the cultural prehistory and early history of seven regions of Texas. Adult leaders in many fields will find that the 208 pages provide the format, vocabulary, and references to integrate units within the curriculum or to develop special projects for enrichment programs. High school.

STORIES AND LEGENDS

☐ **Caduto, Michael J. and Joseph Bruchac**

1990 *Keepers of the Animals.* Fulcrum Press.
Teachers will delight with their children in lovingly told and magically illustrated stories about "our relations with the animals." Twenty-four stories in all demonstrate the power and importance of animals in Native American traditions. This has a teachers guide to go along with it. Kindergarten to junior high.

1990 *Keepers of the Earth.* Fulcrum Press.
This collection is about living, learning and caring. It features a collection of North American Indian stories and related hands-on activities. This has a teachers guide to go along with it. Preschool to junior high.

1992 *Native American Animal Stories.* Fulcrum Press.
Twenty four stories derived from *Keepers of the Animals.* Tribes of the Hopi, Mohawk, Yaqui and other cultures demonstrating the power of animals in Native American traditions. Preschool to junior high.

1994 *Keepers of the Night.* Fulcrum Prèss.
In the Native cultures nighttime is a crucial part of the balance in the universe and this features valuable lessons about the natural world. Included are field-tested, hands-on acitivities. Primary to junior high.

☐ **Monroe, Jean Guard and Ray A. Williamson**
1987 *They Dance in the Sky: Native American Star Myths.* Houghton Miffiin Co.
For countless generations, Native American storytellers have watched the night sky and told tales of the stars and the constellations. This book is an exciting introduction to the skylore of the first Americans. Elementary to junior high.

☐ **Palmer , William R.**
1978 *Why the North Star Stands Still.* Zion Natural History Association.
Legends handed down from generation to generation among the Pahute Indians

who settled centuries ago in the state of Utah. Elementary to junior high level.

☐ **Red Hawk, Richard**
1988 *Grandfather's Origin Story: The Navajo Indian Beginning.* Sierra Oaks Publishing, Co.
Grandfather explains the creation of the Navajos to a group of children, asking them to remember the various stories as their ancestors taught them. Preschool to elementary level.

1988 *Grandfather's Story of Navajo Monsters.* Sierra Oaks Publishing, Co.
For centuries Navajo parents and grandparents have shared these monster stories of giants and warriors defeating terrifying foes with young people. Preschool to elementary level.

MAGAZINES AND JOURNALS

☐ ***Archaeology***. Written for the layperson, includes articles about recent research around the world. It also lists current archaeological exhibits, books, and films, and twice-yearly guides to visiting ongoing excavations at sites in New and Old Worlds. Published bimonthly. Subscription costs available from *Archaeology* Subscription Service, P.O. Box 50260, Boulder, Colorado 80321.

☐ ***Arizona Highways***. Easy to read, well-illustrated. This magazine periodically contains good, summary articles on Arizona's archaeology, although there are sometimes problems with accuracy in the articles.

☐ ***Expedition: The Magazine of Archaeology-Anthropology***. Beautifully illustrated magazine has articles on archaeological and anthropological research. Published quarterly. Subscription cost available from the University Museum, University of Pennsylvania, 33d and Spruce, Philadelphia, Pennsylvania, 19104.

☐ ***Kiva***. Published quarterly by the Arizona Archaeological and Historical Society. Scholarly articles on archaeology and ethnology of the Greater Southwest (which includes northern Mexico). Subscription information available from Arizona Archaeological and Historical Society, Arizona State Museum, University of Arizona, Tucson, Arizona, 85721.

☐ ***National Geographic***. Perennial favorite that frequently includes articles on current archaeological research. Published monthly. Subscription information available from National Geographic Society, P.O. Box 2895, Washington, D.C., 20013.

☐ ***National Geographic World.*** For children, especially upper elementary. Published monthly. Subscription information available from National Geographic Society, P.O. Box 2895, Washington, D.C., 20013.

☐ ***Natural History***. Publication of the American Museum of Natural History. Anthropological articles focus primarily on living cultures, but there are occasional archaeological pieces. Subscription information available from *Natural History* Membership Services, P.O. Box 303, Harlan, Iowa 51593-2091.

☐ ***Smithsonian***. Publication of the Smithsonian Institution, includes articles on natural sciences, history, art, and technology. Articles on archaeology are infrequent, but well done. Published monthly. Subscription information available from *Smithsonian* Subscription Service, P.O. Box 2955, Boulder, Colorado 80321.

AUDIO-VISUAL PROGRAMS

FILMSTRIPS, VIDEOS ANDCOMPUTER PROGRAMS

☐ **Lipetzky, Jerry**
1982 *DIG 2.* Interaction Publishers, Lakeside, California.

A computer-based unit, this also works well without the computer. Has instructions for simulating cultures.

☐ ***2nd Voyage of the Mimi.*** A computer-based interactive unit. Incorporates archaeology, ecology, geography, and other sciences. From time to time, video portion of series is shown on PBS. Available from Sunburst Communications, 1600 Green Hills Road, Scotts Valley, California 95066.

☐ ***The Ancient Ones***. Video traces Southwest prehistoric Indians including Hohokam, Anasazi, and Mogollon. Elementary and secondary. 15 minutes. Available from the Arizona Historical Society, 949 E. Second Street, Tucson, AZ 85719 *602-628-5774.*

☐ ***The Archaeology of Arizona***. Videotape traces the prehistory of Arizona. Briefly describes the Hohokam, Anasazi, and Mogollon Indians and discusses lifeways and what happened to each culture. Also available as slide show. Developed by the Archaeology for the Schools Committee of the Arizona Archaeological Council. Advanced 4–6 and above. *25 minutes.* Available from the Arizona Historical Society, 949 E. Second Street, Tucson, AZ 85719 *602-628-5774.*

☐ ***Mystery of the Cliffs***. Twenty-minute videotape, starring the Teenage Mutant Ninja Turtles, introduces children in lower elementary grades to the concept of stewardship of our country's natural resources. Should be used in conjunction with workbook that can also be provided. Bureau of Land Management, Cultural Heritage Education Team, Anasazi Heritage Center, P.O. Box 758, Dolores, Colorado 81232. *303-882-4811.*

☐ ***Spanish Settlement of Arizona.*** History of the daily life of Spanish settlers is presented in this video, using museum dioramas, artifacts, and drawings. Includes Father Kino, missions, presidios, miners, and ranchers. Elementary and secondary. *15 minutes.* Available from the Arizona Historical Society, 949 E. Second Street, Tucson, AZ 85719 *602-628-5774.*

☐ ***What Is Archaeology?*** Videotape describes the four fields of anthropology and discusses the discipline of archaeology within the anthropological perspective. Slide show also available. Developed by the Archaeology for the Schools Committee of the Arizona Archaeological Council. Advanced 4–6 and above. *20 minutes.* Available from the Arizona Historical Society, 949 E. Second Street, Tucson, AZ 85719 *602-628-5774.*

☐ ***Archaeology of Homol'ovi II.*** Video programs, Macintosh HyperCard software program, and Learning Partner Guidelines designed for upper elementary, for use over about a three-week period. Program includes discussion of what archaeology is and how it is done, using the Anasazi-ancestral Hopi site of Homol'ovi II. Part of the Enrichment Series on Native American Cultures, produced by Educational Systems Programming, P.O. Box 5751, Northern Arizona University, Flagstaff, Arizona 86011-5751. *602-523-9484.*



A4

EVALUATION FORM

Intrigue of the Past

DISCOVERING ARCHAEOLOGY IN ARIZONA

Please constructively evaluate **DISCOVERING ARCHAEOLOGY IN ARIZONA** based on its educational value for yourself and your students. There are three pages to this evaluation form. Please mail it in the enclosed envelope or to the address provided.

Name _____ Grade Level(s) you teach _____

Please rate the following: **1 Excellent 2 Good 3 Average 4 Fair 5 Poor 6 Not Used**

FRONT MATTER

Preface	1	2	3	4	5	6
Foreword	1	2	3	4	5	6
How To Use This Book	1	2	3	4	5	6

STUDENT SECTION

Chapter **1** The People of Arizona	1	2	3	4	5	6
Chapter **2** Packrats, Mammoths . . .	1	2	3	4	5	6
Chapter **3** Why Did Hunter-Gatherers . . .	1	2	3	4	5	6
Chapter **4** Shopping . . .	1	2	3	4	5	6
Chapter **5** How Settled Was Village . . .	1	2	3	4	5	6
Chapter **6** Why are there Indian Ruins . . .	1	2	3	4	5	6
Chapter **7** When Coronado Hit . . .	1	2	3	4	5	6
Chapter **8** Wagon Wheels . . .	1	2	3	4	5	6
About the Authors	1	2	3	4	5	6
Student Glossary	1	2	3	4	5	6
Index	1	2	3	4	5	6

APPENDICES

1 Teacher Lesson Plans	1	2	3	4	5	6
2 References	1	2	3	4	5	6
3 Resources For Teachers	1	2	3	4	5	6
Other _____	1	2	3	4	5	6



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Name _____ Grade Level(s) you teach _____

Please rate the following: **1 Excellent** **2 Good** **3 Average** **4 Fair** **5 Poor** **6 Not Used**

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Other _____	1	2	3	4	5	6

READABILITY

☐ Typeface: Were your students able to read **Discovering Arizona** with ease? Yes Somewhat No

☐ Reading Level: Was it appropriate for your student's grade level? Yes Somewhat No

☐ Subject Matter: Was it appropriate? Yes Somewhat No

GRAPHICS

Please comment if something is less than satisfactory.

☐ Overall format: easy to use? Yes Somewhat No

☐ How would you improve it?

☐ Is the placement of the graphics appropriate to the information in each chapter? Yes Somewhat No

☐ Do the illustrations aid the understanding of the text? Yes Somewhat No

☐ Is the illustration type easy to read? Yes Somewhat No

☐ Amount of illustrations in the chapters? Just right More Fewer

☐ Mix of charts, maps, illustrations, photographs? Just right More Fewer

☐ Are there concepts, ideas, places, or things that you believe need graphic support in the book? Please list them, chapter by chapter. Use a separate sheet if necessary.

☐ What do you like best about the graphics and visual format of the book?

☐ How could this be improved?

GENERAL

☐ What did you find most useful for you about **Discovering Arizona**?

☐ Will you use **Discovering Arizona** in your classroom? Explain.

☐ For later revisions of **Discovering Arizona** (after 1995)– what additions would you like to see?

☐ What would you delete?

THANK YOU!

If a return envelope is not provided, please mail this evaluation form to:

BLM Heritage Education Program
P. O. Box 758
Dolores, Colorado 81323



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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

In Reply Refer To:

Information Bulletin No. 95-

TO: All State Directors

FROM: Group Administrator for Cultural Heritage And Recreation (WO 280)

SUBJECT: Project Archaeology

In 1992 BLM launched *Project Archeology* nationwide after a successful pilot program in Utah as the "Intrigue of the Past" program. *Project Archaeology* helps the Bureau meet the requirements of the 1988 amendments to the Archaeological Resources Protection Act (ARPA) and the 1992 Amendments to the Historic Preservation Act.

Every BLM state, and several in the Southeast, has implemented some aspect of *Project Archaeology* program. Some states have more fully developed programs than others. The Imagination Team, based at Colorado's Anasazi Heritage Center and at the Utah State Office, conducts ongoing field implementation of *Project Archaeology*. The Team works closely with state and field offices as well as with other partners such as the US Forest Service and the National Park Service.

Project Archaeology helps classroom teachers effectively teach about cultural resources and archaeology. BLM's publication, **Intrigue of the Past: A Teacher's Activity Guide for Fourth Through Seventh Grades** forms the basis for the program. It also includes state student handbooks that contain information about the cultural history of each state or region. Each state develops its own Handbook and the Imagination Team produces the Handbooks. *Project Archaeology's* primary delivery system is teacher's workshops.

At the recent Heritage Education Retreat, hosted by the Utah State Office, participants began putting on paper their state plans for implementation of *Project Archaeology*.

The attached chart shows the status of *Project Archaeology* nationally.

Please direct questions to Megg Heath, Chief Heritage Education Project Manager, P.O. Box 758, Dolores, Colorado 81323 or (303) 882-4811 (until April 2) or (970) 882-4811 (after April 1).

Attachment: *Project Archaeology National Status*

Nevada		February 1993 - Ely July - August 1994 - Baker Village		Draft 2/95	
Alabama	In production			In production	
Wyoming	In production				Met with archs 2/93
Idaho	In production	March 1992 - Mountain Home		In production	
Utah	Printed 2/92	10 workshops conducted statewide annually	9/91	Completed 5/94	Program evaluation 1993, Newsletter
Oregon	Draft 1/93	Summer 1993			
Pennsylvania	In production			In production	
Wisconsin				In production	

PROJECT ARCHAEOLOGY
NATIONAL STATUS

Revised March 1995

STATE	HANDBOOK	WORKSHOPS	COORDINATOR	STATE PLAN	OTHER
Arizona	Printed 3/95	June 1994 - Tempe November 1994 ?			Met with Schools Committee 2/93
Alaska	Draft 2/95	August 1994 - Anchorage, Fairbanks June 1995 - Anchorage		In production	Met with SHPO 2/95
California	Northeast region Draft 9/94	August 1993 - Needles September 1994 - Susanville		In production	Met with Society of CA Arch, SHPO, 4/95
Colorado	In production	June 1994 - Pueblo April 1995 - AHC June 1995 - AHC			Meet with SHPO 3/95
New Mexico	Draft 2/95	February, 1995 - Train the Trainers			SHPO Grant, Newsletter
Montana		August 1995 - Billings			
North Carolina	In production			In production	
Mississippi	In production	June 1994, 1995			
Georgia		July 1994 November 1994			Met with NPS & other agencies, 10/93

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
COLORADO STATE OFFICE
2850 YOUNGFIELD STREET
LAKEWOOD, COLORADO 80215-7076

In Reply Refer To:
CO930
1253

TO: Group Administrator for Cultural Heritage and Recreation (WO 280)

FROM: Chief, Heritage Education Project Manager, CO 039

SUBJECT: Arizona Student Handbook

I am pleased to present to you the Arizona State Student Handbook, **Intrigue of the Past: Discovering Archaeology in Arizona.** The Imagination Team designed the Handbook to supplement **Intrigue of the Past: A Teacher's Activity Guide for Fourth Through Seventh Grades**. They will distribute it to Arizona teachers through *Project Archaeology* workshops. The teachers will copy it for use with their students.

The Handbook represents a joint effort with the BLM Arizona State Office and the Arizona Archaeology in the Schools Committee. It will help to maintain healthy ecosystems by encouraging students and teachers to preserve and protect cultural sites within the ecosystems. It directly serves our current and future publics. It improves the way we do business through encouraging the customers to reproduce it so that we do not bear the expense of producing enough copies for all the schools. BLM used collaborative leadership through the partnerships that created the handbook and that will continue in order to implement *Project Archaeology* workshops.

Also enclosed are memos for your signature to transmit the Handbook to the Arizona State Director and to provide an update on Heritage Education activities to all State Directors.

Please direct questions to Megg Heath, Chief Heritage Education Project Manager, P.O. Box 758, Dolores, Colorado 81323 or (303) 882-4811 (until April 2) and (970) 882-4811 (after April 1).

Attachment: AZ Handbooks (2)

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
COLORADO STATE OFFICE
2850 YOUNGFIELD STREET
LAKEWOOD, COLORADO 80215-7076

In Reply Refer To:
CO930
1253

TO: State Director, Arizona (AZ 910)

FROM: Group Administrator for Cultural Heritage and Recreation (WO 280)

SUBJECT: Arizona Student Handbook

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Attachment: AZ Handbook